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45X MAY 23 2001

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 631022

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	Requirements Planning and Support	N/A
5. Proj./Prog./Dept./Div.: River Protection Project/Engineering/Requirements Planning and Support/Process Engineering	6. Design Authority/ Design Agent/Cog. Engr.: Mel R. Adams	7. Purchase Order No.: N/A
8. Originator Remarks: This document is being released into the supporting document system for retrievability purposes.		9. Equip./Component No.: N/A 10. System/Bldg./Facility: N/A
11. Receiver Remarks: 11A. Design Baseline Document? [ ] Yes [X] No For release.		12. Major Assm. Dwg. No.: N/A 13. Permit/Permit Application No.: N/A 14. Required Response Date: 05/23/01

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15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	RPP-8093	N/A	A	Draft Fiscal Year 2002 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document	N/A	2	1	1

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp	(J) Name	(K) Signature MSIN	(L) Date	(M)
		Design Authority									
		Design Agent									
2	1	Cog.Eng. M.R. Adams	M.R. Adams	5/23/01							
2	1	Cog. Mgr. J.W. Hunt	J.W. Hunt	5/23/01							
		QA									
		Safety									
18.		Env.	19.			20.					

18.	19.	20.	21. DOE APPROVAL (if required)
A.E. Young Signature of EDT Originator/Date 5/23/01	N/A Authorized Representative/Date for Receiving Organization	J.W. Hunt 5/23/01 Design Authority/Date Cognizant Manager	Ctrl. No. [ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

BD-7400-172-2 (05/96) GEF097

BD-7400-172-1

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	Requirements Planning and Support	Date 05/23/01
Project Title/Work Order RPP-8093, Rev. A, "Draft Fiscal Year 2002 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document"		EDT No. EDT-631022 ECN No. N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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Draft Fiscal Year 2002 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document

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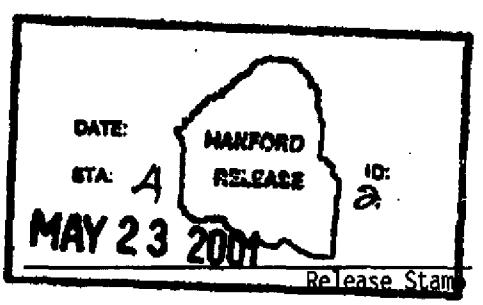
U.S. Department of Energy Contract DE-AC27-99RL14047

EDT/ECN: EDT-631022 UC: 2070
Org Code: 7KN00 Contract No: 7899-32
B&R Code: EW 3120074 Total Pages: 81

Key Words: Draft, Fiscal Year 2002, FY 2002, Tank Characterization, Technical, Sampling, Basis, Waste, Information, Requirements

Abstract: N/A

Release Approval 5/23/01 Date



Approved for Public Release

RPP-8093
Revision A

DRAFT FISCAL YEAR 2002 TANK CHARACTERIZATION TECHNICAL SAMPLING BASIS AND WASTE INFORMATION REQUIREMENTS DOCUMENT

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Date Published
May 2001

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Hanford Group, Inc.

Prepared for the U.S. Department of Energy
Office of River Protection

Contract # DE-AC27-99RL14047, Modification M030

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF TERMS

Bq	Becquerel
CCRN	correspondence control reference number
CHG	CH2M Hill Hanford Group, Inc.
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DQO	data quality objective
DST	double-shell tank
Ecology	Washington State Department of Ecology
ECN	Engineering Change Notice
EPA	U.S. Environmental Protection Agency
FY	fiscal year
HLW	high-level waste
HTI	Hanford Tanks Initiative
ICD	Interface Control Document
IHLW	immobilized high-level waste
ILAW	immobilized low-activity waste
IMUST	inactive miscellaneous underground storage tank
LAW	low activity waste
LDR	Land Disposal Restrictions
LOI	Letter of Instruction
ORP	the U.S. Department of Energy, Office of River Protection
PCB	polychlorinated biphenyl
PNNL	Pacific Northwest National Laboratory
RCRA	*Resource Conservation and Recovery Act*
RPE	Retrieval Performance Evaluation
RPP	River Protection Project
SST	single-shell tank
TCR	Tank Characterization Report
TFVZ	Tank Farm Vadose Zone team
TPA	Tri-Party Agreement (*Hanford Facility Agreement and Consent Order*)
TSB-WIRD	*Technical Sampling Basis and Waste Information Requirements Document*
TSR	Technical Safety Requirements
TWINS	Tank Waste Information Network
WFD	Waste Feed Delivery
WPD	Waste Processing Development
WP&D	Waste Processing and Disposal
WTP	Waste Treatment Plant
%	percent

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1.0 PURPOSE

The *Draft Fiscal Year 2002 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document* (TSB-WIRD) has the following purposes:

- To identify and integrate sampling and analysis needs for fiscal year (FY) 2002 and beyond.
- To describe the overall drivers that require characterization information and to document their source.
- To describe the process for identifying, prioritizing, and weighting issues that require characterization information to resolve.
- To define the method for determining sampling priorities and to present the sampling priorities on a tank-by-tank basis.
- To define how the characterization program is going to satisfy the drivers, close issues, and report progress.
- To describe deliverables and acceptance criteria for characterization deliverables.

Characterization information is required to maintain regulatory compliance, perform operations and maintenance, resolve safety issues, and prepare for disposal of waste. Commitments connected with these requirements are derived from the *Hanford Facility Agreement and Consent Order* (Ecology et al. 1996), also known as the Tri-Party Agreement (TPA), *Hanford Facility Agreement and Consent Order Change Control Form M-44-97-03* (Ecology et al. 1997), and other requirement sources described in Section 3.0 of this document.

The information contained in this TSB-WIRD reflects ongoing planning and current understanding of characterization information needs to resolve the issues listed in this TSB-WIRD. Since baseline requirements are subject to revision, the information contained herein may not exactly reflect baselines or sampling schedules published at a later date.

2.0 CHARACTERIZATION INFORMATION FLOW DIAGRAM

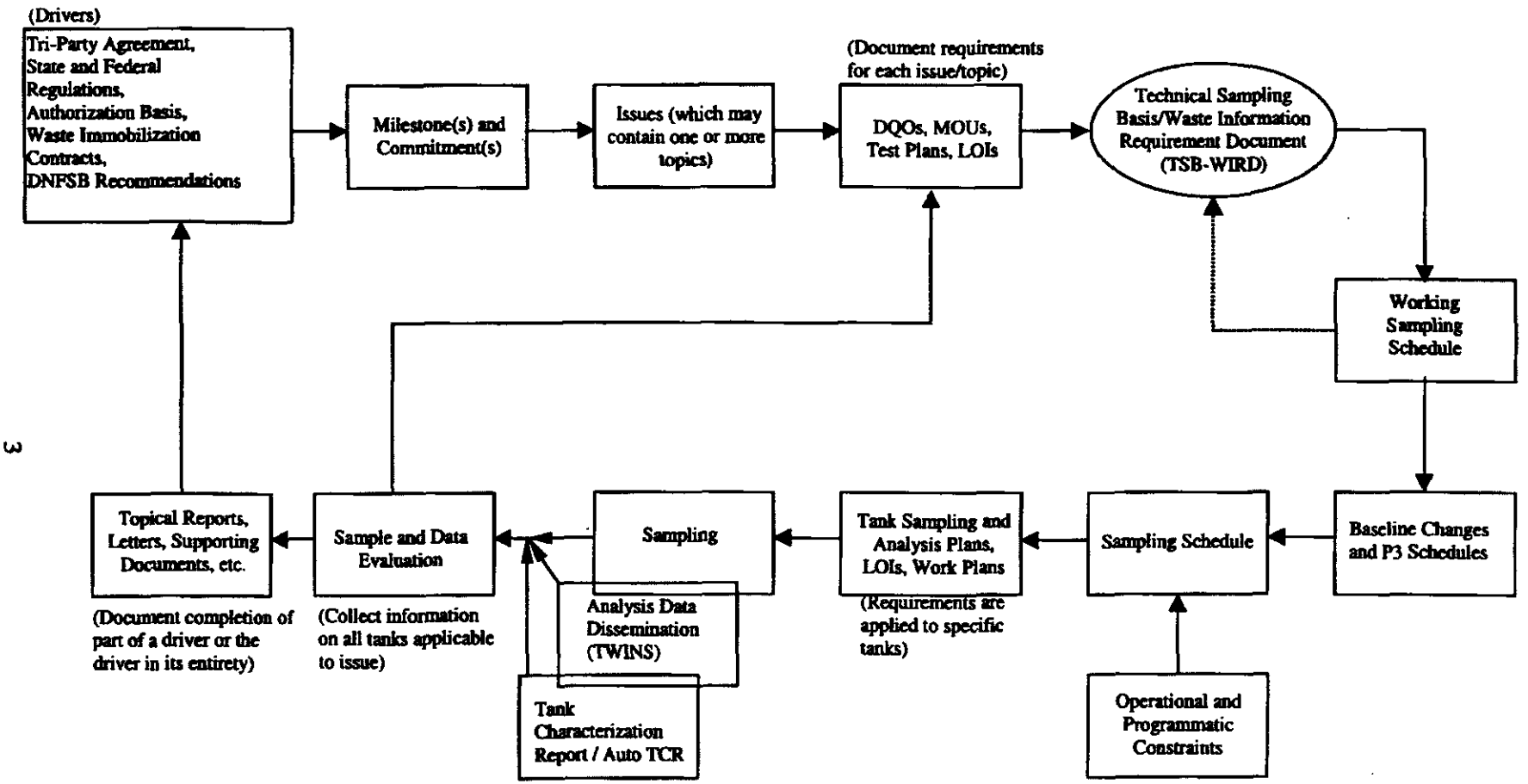
Figure 2-1 illustrates the process by which characterization information is generated and used. This document, the TSB-WIRD, is shown with an oval for quick identification. Each box represents a step in the characterization process. A step may be the creation of a document(s), execution of an event(s), or performance of a work function(s). Each step requires information from a preceding step. Note that the process is iterative; that is, information learned from a step may cause subsequent changes.

The specific information represented by each box or oval may change over time. The information drivers may change or be completed. Milestones may be added or removed. Data quality objectives (DQOs), test plans, and letters of instruction (LOIs) are created, removed, or updated periodically to reflect current program needs.

The TSB-WIRD is updated annually to reflect changes in milestones and commitments. TSB-WIRD and operational and programmatic constraints are all combined to create a sampling schedule. The sampling schedule is routinely updated and changed to reflect changes in the program needs and conditions in the field.

Tank sampling and analysis plans (TSAPs), LOIs, and work plans are generated prior to tank sampling. The information from data evaluations is reported via electronic databases and Web access, reports both hardcopy and electronic, letters, supporting documents, and other means to complete portions of a driver or the driver in its entirety. The cycle ends when there are no more drivers for information and all issues are closed.

Figure 2-1. Characterization Information Flow Diagram



3.0 CHARACTERIZATION INFORMATION DRIVERS

Characterization information drivers are currently derived from the following primary sources:

- Tri-Party Agreement (TPA)
- Regulatory requirements
- Disposal drivers
- Authorization Basis documents
- Consent decree (interim stabilization).

Documents describing these drivers, program activities meeting the objectives of the drivers, and associated information needs were used as input to this TSB-WIRD. Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 93-5 (DOE-RL 1996), which was a driver in previous years, was completed and closed in November 1999.

Supporting documents report or reflect information driver milestones, commitments, and deliverables. Types of supporting documents include:

- Waste Characterization Multi-Year Work Plan and subsequent Baseline Change Requests,
- Topical Reports, and
- DQO documents.

Each information driver source is discussed in the sections following.

3.1 TRI-PARTY AGREEMENT MILESTONES

Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement [TPA]) (Ecology et al. 1996) is an agreement between the U.S. Department of Energy (DOE), Washington State Department of Ecology (Ecology), and the U.S. Environmental Protection Agency (EPA). The agreement defines what actions the U.S. Department of Energy must take to complete the cleanup mission at the Hanford Site. The milestones in the TPA constitute a major driver for characterization activities.

Tri-Party Agreement milestones related to tank waste treatment capacity acquisition, tank waste treatment and associated tank waste work requirements underwent a dispute resolution process. On March 29, 2000, Ecology issued a final determination (Ecology 2000).

Under the final determination, milestones M-50-00 (Complete Pretreatment Processing of Hanford Tank Waste: 12/31/2028), M-51-00 (Complete Vitrification of Hanford High Level Tank Waste: 12/31/2028) and M-61-00 (Complete Pretreatment and Immobilization of Hanford Low Activity Tank Waste under the alternate path: 12/31/2028) remain in force in the new M-62-00 major milestone. *Hanford Federal Facility Agreement and Consent Order* major milestone M-60-00 (Complete Pretreatment and Immobilization of Hanford Low Activity Tank Waste under the primary path: 12/31/2024, and interim milestones and target dates in the M-50-00, M-51-00, M-60-00 and M-61-00 series are deleted. Milestone M-45-00 (Complete Closure of All Single Shell Tank Farms: 09/30/2024) has been modified. Milestone M-47-00 (Complete All Work Necessary to Support the Acquisition and Phase I Operations of Hanford Site High-Level Radioactive Tank Waste Treatment, Storage and Disposal Facilities: 02/28/2018) is established. Milestone M-90-00 (Complete Acquisition of New Facilities, Modification of Existing Facilities and/or Modification of Planned Facilities as Necessary for Storage of Hanford Site IHLW and ILAW, and Disposal of ILAW: date to be established) has been modified.

A number of TPA milestones under the final determination are or will be supported by the characterization program. Milestone due dates and their relationship to TSB-WIRD issues are shown in Table 3-1. Please note that the milestone due dates shown in Table 3-1 are not repeated in the text discussion of each milestone. Also, in the case of the M-45 series TPA milestones, milestone M-45-00A addresses the completion of "near-term" single-shell tank (SST) waste retrieval activities. "Near-term" is defined as prior to September 30, 2006. During this period of time, the primary focus is on retrieving wastes from those SSTs with a high volume of contaminants of concern (i.e., mobile, long-lived radionuclides). Near-term activities also focus on the performance of key retrieval technology demonstrations in a variety of waste forms and tank farm locations to establish a technical basis for future work. The work scope also focuses on the performance of risk assessments, incorporating tank farm vadose zone characterization data on a tank-specific basis, and updating tank farm closure/post-closure work plans. Under TPA milestone M-45-00C, renegotiation of the second phase of SST waste retrieval activities will be completed to address work scope for the time period covering 2006 through 2015. In general, sampling will be required in support of retrieval system designs, verification of retrieval system performance, and tank closure/post-closure activities.

Table 3-1. Major Tri-Party Agreement Milestones Related to Characterization Issues

Program or Issue	Milestone or Driver	Milestone Due Date
Interim Stabilization	Consent Decree	9/30/2004
Operations Sampling	M-43-00	6/30/2005
Tank Waste Disposal • Waste Feed Delivery, Phase 1 • ICD-23 • HLW/LAW Feed DQO • Certification (ICD-19 and ICD-20)	M-47-00 M-62-00 M-62-00A M-62-06* M-62-07* M-62-08 M-90-00	2/28/2018 12/31/2028 2/28/2018 7/31/2001 TBD 7/31/2005 To be established after approval of project management plan.
SST Retrieval and Closure	M-45-00	9/30/2018 (retrieve wastes)* 9/30/2024 (close all tanks)*
Miscellaneous Facilities • AR Vault Interim Stabilization	M-45-11	9/30/2003
Safety Issues	M-40-00	9/30/2001
Characterization Information Deliverables	M-44-00A M-44-13E M-44-14E M-44-15E M-44-15F M-44-16E M-44-16F	9/30/2002 6/30/2001 8/31/2001 9/30/2001 9/30/2002 9/30/2001 9/30/2002

Notes:

HLW - High Level Waste
HTI - Hanford Tanks Initiative
ICD - Interface Control Document
LAW - Low Activity Waste

* milestones subject to renegotiation.

3.1.1 Tri-Party Agreement Major Milestone M-40-00, "Mitigate/Resolve Tank Safety Issues for High Priority Watch List Tanks."

Tri-Party Agreement (TPA) Milestone M-40-00 deals with closing all safety issues associated with single-shell and double-shell tanks. Characterization supports this milestone through the opportunistic sampling and analysis of tank waste material. Each safety issue has an associated DQO that specifies what information is required to resolve the safety issue. All identified safety issues for double-shell tanks and single-shell tanks

have been satisfactorily resolved. However, some SSTs not previously sampled for safety screening purposes continue to have the Safety Screening DQO applied opportunistically when the SST is sampled for another purpose. (See Appendix B, Table B-12.)

3.1.2 Consent Decree, "Complete Single-Shell Tank Interim Stabilization."

The Consent Decree deals with the stabilization of SSTs. This involves removing the pumpable liquid from the SSTs and moving it to the double-shell tanks (DSTs). This operation requires compatibility analysis of the tank liquid to be moved and of the waste in the receiving tank. Characterization supports this milestone by providing compatibility sampling and analysis. A schedule for completion of SST interim stabilization is part of the Consent Decree (Ecology and DOE 1999).

3.1.3 Tri-Party Agreement Major Milestone M-43-00, "Complete Tank Farm Upgrades."

Tri-Party Agreement milestone M-43-00 deals with tank farm upgrades including ventilation upgrades and the cross-site transfer system. Characterization support is provided on an as-needed basis. Operations samples are taken to support such upgrades.

3.1.4 Tri-Party Agreement Major Milestone M-44-00A, "Complete Delivery of Information Requirements as Identified in the Annually Submitted WIRD."

The characterization program directly supports this milestone. For instance, the TSB-WIRD itself is a deliverable each year in the M-44-00A series. Milestones in the M-44 series are listed in Table 3-1. This milestone has six subparts relevant to this TSB-WIRD:

- M-44-13E: Submit draft WIRD to Ecology for FY 2002.
- M-44-14E: Submit final WIRD for FY 2002 to Ecology.
- M-44-15E: Issue characterization deliverables consistent with WIRD developed for FY 2001.
- M-44-15F: Issue characterization deliverables consistent with WIRD developed for FY 2002.
- M-44-16E: Complete input of characterization information for HLW tanks for which sampling and analysis were completed per the WIRD into electronic database.
- M-44-16F: Complete input of characterization information for HLW tanks for which sampling and analysis were completed per the WIRD into electronic database.

3.1.5 Tri-Party Agreement Major Milestone M-45-00, "Complete Closure of All Single-Shell Tanks."

Under TPA Milestone M-45-00A, *"Complete Negotiation of Near-Term (prior to 9/30/2006) SST Waste Retrieval Activities,"* the retrieval strategy for SSTs has been modified from focusing on maximizing the number of tanks retrieved to focusing on retrieval of wastes from those tanks with a high volume of contaminants of concern. Contaminants of concern are defined as those mobile, long-lived radionuclides that have a potential for reaching the groundwater and Columbia River. A DQO (Banning 2001b) addresses analyses of the contaminants of concern.

The near-term strategy also focuses on performance of key retrieval technology demonstrations in a variety of waste forms and tank farm locations. Work will focus on performing risk assessments, incorporating vadose zone characterization data on a tank-specific basis, and on updating tank farm closure/post-closure plans. The near-term work scope includes, but is not limited to, completion of one "Limits of Technology" retrieval demonstration, initiation of a second "Limits of Technology" retrieval demonstration, and retrieval of sufficient SST waste containing an estimated 800 curies of contaminants of concern and occupying a minimum of two-million gallons of DST space.

The second phase of SST retrieval activities will be identified under TPA Milestone M-45-00C, "Complete Renegotiation of Second Phase (9/30/2006 through 9/30/2015) SST Waste Retrieval Activities." This renegotiated milestone is due February 28, 2004.

Characterization support will be required in support of retrieval and leak detection system designs. Once retrieval operations are completed, characterization of waste residuals will be required to verify retrieval system performance and support tank closure/post-closure plans.

The U.S. Department of Energy, Office of River Protection (ORP) and Ecology also agreed to include the 244-AR Vault interim stabilization effort in this TPA series. Interim milestones include:

- M-45-11: Complete 244-AR Vault interim stabilization
- M-45-11A: Submit 244-AR Vault Interim Stabilization Project Plan for Ecology approval (completed).

3.1.6 Tri-Party Agreement Major Milestone M-47-00, "Complete All Work Necessary in Support of the Acquisition and Phase 1 Operations of Hanford Site High-Level Radioactive Tank Waste Treatment, Storage and Disposal Facilities."

A new M-47-00 milestone intended to support the acquisition and operation of the Phase 1 Tank Waste Treatment Complex has been established by Ecology's final determination.

3.1.7 Tri-Party Agreement Major Milestone M-62-00, "Complete Pretreatment Processing and Vitrification of Hanford High Level and Low Activity Tank Wastes."

A new milestone series addresses procurement, construction, and operation of a tank waste treatment complex for the pretreatment and vitrification of tank wastes. Characterization will support this milestone as necessary by providing samples and/or information needed to accomplish the work.

This milestone contains a number of subparts as listed below:

- M-62-00A: Complete Pretreatment Processing and Vitrification of Hanford HLW and LAW Phase 1 Tank Wastes
- M-62-06: Start of Construction- Phase 1 Treatment Complex
- M-62-07: Construction Progress Milestones- Phase 1 Treatment Complex
- M-62-08: Submittal of Hanford Tank Waste Phase 2 Treatment Alternatives Report.

3.1.8 Tri-Party Agreement Major Milestone M-90-00: "Complete Acquisition of New Facilities, Modification of Existing Facilities, and/or Modification of Planned Facilities as Necessary for Storage of Hanford Site IHLW and ILAW, and Disposal of ILAW."

Milestone M-90-00 concerns the planning and construction of facilities to store the final immobilized product. Characterization information may be required as input to the design.

3.2 REGULATORY DRIVERS FOR CHARACTERIZATION

Several state and federal regulatory requirements are associated with sampling and analysis of dangerous waste, polychlorinated biphenyls (PCBs), and air emissions. Regulatory drivers are listed in several DQOs including Mulkey (1999a), Mulkey (1999b), and Mulkey and Markillie (1996). Sampling and analysis for Waste Immobilization environmental requirements are listed in the Waste Immobilization regulatory compliance DQO that was issued in December 1998 (Wiemers et al. 1998).

3.3 DISPOSAL DRIVERS FOR CHARACTERIZATION

In December 2000, the ORP awarded a contract to Bechtel National Inc. to design, construct and commission a Hanford Tank Waste Treatment and Immobilization Plant (ORP 2001). The specific information requirements known at this time to support the contract are developed in several DQOs, including:

- *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project*, PNNL-12040, (Wiemers et al. 1998).

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for High Level Waste Feed Batch X*; HNF-1558, Revision 2 (Nguyen 1999a.).

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for Low-Activity Waste Feed Batch X*; HNF-1796, Revision 2 (Nguyen 1999b).

- *Data Quality Objectives for RPP Privatization Phase 1: Tank Waste Transfer Control*; HNF-1802, Revision 1 (Banning 1999).

- *Characterization Data Needs for Development, Design and Operation of Retrieval Equipment Developed through the Data Quality Objective Process*; WHC-SD-WM-DQO-008, Revision 1 (Bloom and Nguyen 1996).

- *Low-Activity Waste and High-Level Waste Feed Processing Data Quality Objectives*, PNNL-12163, Revision 0 (Patello et al. 1999).

Other requirements including sampling requirements are spelled-out in the Interface Control Document (ICD)-19 (BNFL 2000a), Interface Control Document (ICD)-20 (BNFL 2000b), and Interface Control Document (ICD)-23 (BNFL 2000c). The *Tank Farm Contractor Operations and Utilization Plan (TFCOUP)* (Kirkbride et al. 2000) provides an engineering analysis for the retrieval baseline that supports Waste Immobilization.

3.4 SAFE OPERATIONS DRIVERS FOR CHARACTERIZATION (AUTHORIZATION BASIS)

The Authorization Basis consists of a suite of documents including the *Tank Waste Remediation System Final Safety Analysis Report* (Sandgren 2000), *Tank Farms Technical Safety Requirements* (Kripps 2001), various supporting documents, and an ORP approved letterbook. The documents constitute the technical basis for safe operations and maintenance of the tank farm facilities, equipment, and processes. This suite of documents is revised frequently. Reference should be made to the controlled "gold" copy suite located in the Tank Characterization and Safety Resource Center in the 2750E Building. Specific needs for characterization to implement Technical Safety Requirement (TSR) Administrative Control Programs are identified in *Tank Farms Operations Administrative Controls* (Coleman et al.1997).

4.0 INFORMATION DRIVERS: SUPPORTING DOCUMENTS

Supporting documents report, schedule, evaluate, or reflect the milestones, commitments, or deliverables connected with information drivers. Supporting documents generally do not contain information drivers, but, in the case of DQOs, provide specific requirements associated with an information driver.

4.1 WASTE CHARACTERIZATION PROGRAM MULTI-YEAR WORK PLAN

The *River Protection Project FY 2000 Multi-Year Work Plan Summary,* RPP-5044, (RPP 1999) known as the MYWP contains the technical baseline, work breakdown structure, schedule, and cost baseline for the Characterization Program. In FY 2001, the MYWP consisted of a Baseline Change Request (RPP-00-127) that revised the out-year budget and schedule portions of RPP-5044. The implementation of the Baseline Change Request consisted of making the P3 schedule the baseline and performance measure standard.

4.2 TOPICAL REPORTS

Topical reports are technical documents that are used to present the current knowledge on a particular issue. Additional data or analysis needs may be discovered during preparation of a topical report that can lead to additional waste behavior studies.

Published topical reports include:

- *Flammable Gas Project Topical Report,* HNF-SP-1193, Rev. 2 (Johnson et al. 1997)
- *Organic Complexant Topical Report,* HNF-SD-WM-CN-058, Rev. 1 (Meacham et al. 1997)
- *Organic Solvent Topical Report,* HNF-SD-WM-SARR-036, Rev. 1A (Cowley 1997).

4.3 DATA QUALITY OBJECTIVE DOCUMENTS

The DQOs define the type and extent of characterization necessary to resolve or address a specific issue. Each program issue associated with the River Protection Project (RPP) requiring sampling and analysis has an associated DQO that defines the questions, decisions to be made, required information, and the quality of data required to resolve the questions. Table C-1 of Appendix C lists the DQOs and their status. An active DQO is one wherein the data are still being collected to satisfy it or it is a DQO in preparation that has not yet been released. An inactive DQO is one against which data are no longer being collected.

Although a DQO may be closed or closing for SST/DST issues, it may remain active for inactive miscellaneous underground storage tanks (IMUSTs) or other activities. A DQO currently inactive could again become active if new issues or questions arise.

5.0 PROCESS FOR DETERMINING CHARACTERIZATION ISSUES AND PRIORITIES

The process for determining characterization issues and priorities was completed in a facilitated workshop session that included representatives from the programs and projects that require characterization information, ORP, and Ecology. A meeting report from the session forms the basis for this section of the TSB-WIRD (Adams 2001a). The objective of the facilitated session held on January 31, 2001 was threefold: (1) identify technical issues needing characterization support for fiscal year 2002 and beyond; (2) determine the relative priority (priority rank) of the issues; and (3) establish the relative ranking and weight of the issues.

The representatives in the facilitated session determined that none of the issues from FY 2001 should be dropped, but four new issues were added: chemistry for corrosion control, key processing parameters, PCBs, and best-basis inventory (BBI).

Following identification of the issues, the maximum benefit gained by sampling for each issue was determined. Table 5-1 shows the maximum benefit derived from sampling for each issue. Note that in Table 5-1 the issues are arranged alphabetically and not in the order of priority that was determined later in the workshop. Further elaboration of these issues can be found in Section 6.0 of this TSB-WIRD.

Table 5-1. Maximum Benefit Gained by Sampling for Each Issue. (2 sheets)

Issue	Maximum Benefit
Best-Basis-Inventory	Measurements to improve/enhance an inventory needed to support site wide activities.
Certification (ICD-19 and ICD-20; certification of low and high feed tanks)	Ensures staged feed will meet ORP/WTP feed acceptance criteria.
Chemistry For Corrosion Control	Prevent early failure of DSTs. Comply with technical safety requirements (TSRs). Support DST life extension activities.
Evaporator Operations	Reduces DST waste volume to optimize tank space and supports interim stabilization/SST retrieval. Ensures that waste processing is in compliance with environmental and safety requirements.
HLW/LAW Feed DQO (WPD)	Ensures contractual envelopes are met. Establishes a basis for contract requirements and allows for future optimizations.

Table 5-1. Maximum Benefit Gained by Sampling for Each Issue. (2 sheets)

Issue	Maximum Benefit
ICD-23 (WTP Regulatory and Process Testing)	Supports and ensures validity of WTP design (e.g., bench scale testing). Facilitates permitting for both WTP and RPP.
IMUSTs	Facilitates future retrieval transfers.
Interim Stabilization	Reduce the risk to the environment by removing fluids from SST into DSTs. Comply with TPA milestones. Allow transfers to be made without adverse consequences.
Key processing parameters (e.g., sulfate, etc.)	Confirm best-basis inventories to allow determination of appropriate WTP melting technology, WTP design, ILAW storage requirements, waste treatment plant and waste feed delivery schedule, and RPP costs.
Miscellaneous Facilities (e.g., 244-AR, 244-CR, etc.)	Protect the environment through deactivation activities. Supports TPA milestone (244-AR) and stakeholder commitments (244-CR).
Operations Sampling (tank transfers, cross-site transfers, compatibility)	Allows proceeding with operational activities and transfers without violating regulations or the Authorization Basis.
PCBs	Compliance with *Toxic Substances Control Act* (TSCA) and supports WTP permitting.
Regulatory - Air Emissions	Ensures compliance with environmental regulations and supports uninterrupted completion of tank farm contractor projects.
Regulatory - Dangerous Waste	Ensures compliance with environmental regulations and supports uninterrupted completion of Tank Farm Contractor projects.
Safety Screening	Validates assumptions used to resolve safety issues.
SST Retrieval and Closure	Provides risk based (Retrieval Performance Evaluation [RPE] methodology) design basis for SST retrieval, Leak Detection Monitoring Mitigation (LDMM), and closure system designs.
Waste Feed Delivery (WFD)	Validates the specification and retrieval requirements for planned feed to WTP contractor.

Notes:

WPD = Waste Processing Development
WTP = Waste Treatment Plant

Following determination of the issues and the maximum benefit gained by sampling, the representatives then determined the rank priority of issues using a decision analysis technique known as the Nominal Grouping Technique (NGT). Following determination of the relative priority of the issues, the issue weights were determined by the representatives using the Multi-Attribute Decision Analysis technique. Determination of issue weights was performed by establishing the most important issue (Operations Sampling) with a relative weight of 100. Representatives determined the relative weight of every other issue with respect to Operations Sampling. After individual inputs for the relative importance of each issue, the results of the inputs were combined and individual weights were averaged. Table 5-2 provides the ranks and weights of the issues. It should be noted that an issue listed with a low priority does not mean that the issue is not important. The priority is simply a means to permit optimum utilization of limited resources.

Table 5-2. Results of Ranking and Weighting of Issues

ISSUES	PRIORITY NUMBER	ISSUE WEIGHT
Operations Sampling (tank transfers, cross-site transfers, compatibility)	1	100
Evaporator Operations	2	95
Interim Stabilization	3	92
Chemistry For Corrosion Control	4	86
ICD-23 (WTP Regulatory and Process Testing)	5	79
Waste Feed Delivery (WFD)	6	75
SST Retrieval and Closure	7	70
Key processing parameters (e.g., sulfate, etc.)	8	61
HLW/LAW Feed DQO (WPD)	9	56
Regulatory - Dangerous Waste	10	45
PCBs	11	42
Best-Basis Inventory	12	37
Regulatory - Air Emissions	13	34
Miscellaneous Facilities (e.g., 244-AR)	14	22
Certification (ICD-19 and ICD-20; certification of low and high feed tanks)	15	13
Safety Screening	16	9
IMUSTs	17	6

6.0 ISSUES REQUIRING CHARACTERIZATION INFORMATION

The issues listed and ranked in Tables 5-1 and 5-2 are further described in the following sections. Information required by each issue is documented through the DQO process (EPA 1994 and CHG 1999). The DQO process leads to the documentation of information needs, data quality requirements, boundary conditions, and special handling requirements relating to sampling and analysis. The DQO process is an iterative one requiring that a DQO be revised when program needs or conditions change. Appendix C, Table C-1 lists DQOs.

6.1 OPERATIONS SAMPLING

Operations sampling covers tank transfers, cross-site transfers, and other miscellaneous operations requirements.

Information requirements to support waste compatibility issues and waste transfers are described in the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (Mulkey et al. 1999), the *Double-Shell Tank Waste Analysis Plan* (Mulkey 1998), and from the *Final Safety Analysis Report* (Sandgren 2000). Waste transfers that require compatibility information include transfers from DST to DST, SST to DST, and waste generators to DSTs. All DSTs are within the scope of the compatibility DQO. The SSTs are within the scope of the compatibility DQO when wastes are to be transferred out of a SST for interim stabilization of a tank or for staging to a DST. Sampling of tanks is required only when insufficient data exists to conduct a compatibility analysis for authorization of a transfer.

6.1.1 Tank Transfers and Cross-Site Transfers

The planned needs for tank-to-tank transfers and cross-site transfers are primarily the result of the following activities:

- Operations - transfers are needed to pre-stage waste prior to transferring to the evaporator feed tank, store concentrated evaporator wastes, free up tanks for other use, and move waste from the 200 West to the 200 East Area.
- Waste Feed Delivery - prepare for waste feed delivery to the WTP contractor facility.

Table B-1, Appendix B, includes tanks needing data for authorization of planned waste transfers and cross-site transfers.

6.1.2 Miscellaneous Operations Requirements

Sampling and analysis to meet other safety, operational, or environmental monitoring concerns vary. Examples of these needs include, but are not limited to, condensed and/or vapor phase sampling in support of flammable gas monitoring; ongoing, immediate safety concerns; industrial hygiene concerns, and/or sampling to evaluate unusual or suspect tank conditions. When such occur, letters of instruction are prepared to control characterization work.

6.2 EVAPORATOR OPERATIONS

Successful operation of the 242-A Evaporator requires sampling and analysis of evaporator feed waste in either a candidate feed staging tank or the source tank itself. The sampling and analysis requirements are described in *242-A Evaporator Data Quality Objectives* (Von Bargen 1998 and Bowman 2000).

The evaporator DQO has requirements for three functions:

- Process control evaluation to ensure the evaporator operates efficiently with minimal equipment degradation. Process control evaluation also compares the waste compatibility in the candidate feed tanks with the wastes in the feed and slurry tanks.

- Safety evaluation to ensure that hazardous wastes do not endanger workers or the environment.

- Environmental compliance evaluation to ensure the waste meets regulatory acceptance criteria, and the emissions to the air and to the Liquid Effluent Retention Facility (LERF) are in compliance with environmental limits.

The 242-A Evaporator slurry in-line sampler has failed, and is expected to remain out of service until 2004. During the interim, the concentrated slurry samples normally obtained within the 242-A Evaporator system will be obtained by the characterization program from the slurry receiver tank, 241-AW-106, at the end of each evaporator campaign.

Tanks that transfer waste to the feed tank are referred to as candidate feed tanks and currently includes tank 241-AP-107. Tanks supporting the evaporator operations issue are listed in Appendix B, Table B-2.

6.3 INTERIM STABILIZATION

Saltwell pumping, or interim stabilization, is the primary method used to minimize future leakage from SSTs until the waste in the SSTs is retrieved and processed. In the pumping process, supernatant and drainable interstitial liquid are pumped out of the saltwell of a SST and into a DST.

Interim stabilization of SSTs has been a major activity requiring compatibility sampling. The primary document defining interim stabilization needs is the *Single-Shell Tank Interim Stabilization Project Plan* (Lewis 1999). In addition, the State of Washington and the U.S. Department of Energy have developed a *Consent Decree* (Ecology and DOE 1999) issued in September 1999 that established a pumping schedule for SSTs. The court ordered consent decree replaced language in the TPA pertaining to tank stabilization. The consent decree requires 98 percent of the remaining 4 million gallons of liquid waste to be pumped by September 2003 and the final 2 percent to be removed by September 2004. The pumping schedule and other consent decree requirements are shown below in Tables 6-1 and 6-2.

Table 6-1. Table of Planned Pumping per Consent Decree. (2 sheets)

Tank Designation	Projected Pumping Initiation Date	Projected Pumping Completion Date**
1. T-104	N/A	Completed
2. T-110	N/A	Completed
3. SX-104	N/A	Completed
4. SX-106	N/A	Completed
5. S-102	Initiated	April 15, 2002
6. S-106	N/A	Completed
7. S-103	N/A	Completed
8. U-103 *	N/A	Completed
9. U-105 *	N/A	Completed
10. U-102*	Initiated	April 15, 2002
11. U-109*	Initiated	April 15, 2002
12. A-101	Initiated	September 30, 2003
13. AX-101	Initiated	September 30, 2003
14. SX-105	Initiated	February 28, 2003
15. SX-103	Initiated	February 28, 2003
16. SX-101	Initiated	February 28, 2003
17. U-106 *	N/A	Completed
18. BY-106	July 15, 2001	June 30, 2003
19. BY-105	July 15, 2001	June 30, 2003
20. U-108	December 30, 2001	August 30, 2003
21. U-107	December 30, 2001	August 30, 2003
22. S-111	December 30, 2001	August 30, 2003
23. SX-102	December 30, 2001	August 30, 2003

Table 6-1. Table of Planned Pumping per Consent Decree. (2 sheets)

Tank Designation	Projected Pumping Initiation Date	Projected Pumping Completion Date**
24. U-111	November 30, 2002	September 30, 2003
25. S-109	Initiated	September 30, 2003
26. S-112	November 30, 2002	September 30, 2003
27. S-101	November 30, 2002	September 30, 2003
28. S-107	November 30, 2002	September 30, 2003
29. C-103	August 29, 2002	August 30, 2003

Notes: * tanks containing organic complexants.
**The projected pumping completion dates in Table 6-1 are based on estimates to remove 98% of the remaining pumpable liquid. DOE will complete interim stabilization of the final 2% of pumpable liquid in the tanks listed above by September 30, 2004.

Table 6-2. Percentage of Pumpable Liquids Remaining to be Removed

Percentage	Date
93 % of Total Liquid	9/30/1999
38 % of Organic Complexed Pumpable Liquids	9/30/2000
5 % of Organic Complexed Pumpable Liquids	9/30/2001
18 % of Total Liquid	9/30/2002
2 % of Total Liquid	9/30/2003

Tanks 241-S-112 and 241-C-103 are expected to be sampled in FY 2001. If completed, no samples will be needed in FY 2002 for this issue because sampling for the consent decree requirements will have been satisfied in FY 2001.

6.4 CHEMISTRY FOR CORROSION CONTROL

Availability of sufficient DST storage space is recognized by the Hanford Site regulators and stakeholders to be a critical element in the successful retrieval and disposal of tank wastes. The need to maximize the useful life of DSTs has led to the implementation of Tank Safety Requirement (TSR) Administrative Control 5.15, *Chemistry Control* (Kripps 2001). Chemistry compatibility assessments provide a level of confidence that chemistry specifications are met after waste transfers into and between DSTs. However, chemical reactions such as the absorption of carbon dioxide by dilute caustic solutions and reactions of caustic and waste organics can cause waste chemistry to go out of specification with time. A waste chemistry surveillance program has been implemented to periodically sample and analyze DSTs to verify compliance with TSR Administrative Control 5.15 limits. More frequent sampling is required for DSTs containing high concentrations of organics and dilute waste mixtures with a propensity to caustic, including tanks with low volume heels.

Sampling requirements projected for this issue are contained in RPP-7795, *Technical Basis for Chemistry Control Program* (Fort et al. 2001).

Current approved tank sampling priorities for chemistry corrosion control are shown in Appendix B, Table B-3. As RPP-7795 is reviewed and implemented, additional sampling may be required. Additional sampling needs will be reflected in TSB-WIRD quarterly update reports.

6.5 INTERFACE CONTROL DOCUMENT (ICD)-23 (WASTE TREATMENT PLANT REGULATORY AND PROCESS TESTING)

In December 2000, ORP awarded a Design and Construction contract for the Hanford Tank Waste Treatment and Immobilization Plant (ORP 2001). As part of the contract, the Interface Control Document for Waste Treatability Samples (ICD-23) identifies samples supplied to the Waste Treatment Plant (WTP) contractor by DOE. Using sample material identified in ICD-23, the WTP contractor conducts analysis for WTP regulatory requirements, waste treatability studies, and process verification testing to develop information in support of WTP facility design, safety basis, permit preparation, operation, and waste form compliance. The waste regulatory and treatability studies are being conducted using samples of candidate LAW feed and HLW feed collected from source tanks.

ICD-23 provides a multiyear forecast for sample needs and the time frame samples are to be delivered from the Hanford site to a WTP contractor test facility. The WTP contractor or designated subcontractor conducts regulatory and process testing activities and analysis of samples in support of permitting. Permitting analyses are conducted using Regulatory Data Quality Objectives (Regulatory DQO) (Wiemers et al. 1998) or adaptation thereof, as determined through negotiations with the regulator agencies.

The WTP contractor implementation of the Regulatory DQO requires a two-step process. Step 1 includes determining the Method Detection Limit (MDL) and Estimated Quantitation Limit (EQL) for sample analysis. In addition, Step 1 determines analytical impacts from sample hold times. Activities have commenced for step 1 and are expected to continue through 2002. Step 2 consists of sampling and analyzing tanks, as negotiated with ORP, based on the results of step 1. Those tanks are listed in ICD-23 and in this TSB-WIRD, but are still subject to negotiation by ORP and the WTP contractor.

In addition to samples needed for regulatory purposes, other samples are needed by the WTP contractor to conduct process verification and waste form qualification tests in support of design and operation of the WTP. ICD-23 also provides a forecast of samples requested by the WTP contractor for delivery during the design and construction phases of the contract.

ICD-23 sampling requirements in this TSB-WIRD are based on sample delivery dates to the WTP contractor test facility for fiscal years 2002, 2003, and 2004 and beyond. Tank sampling is reflected in this TSB-WIRD in the fiscal year the sampling activity is expected to be required. The WPT project is being re-baselined by Bechtel National Inc. Changes to ICD-23 may result from this re-baselining effort.

Specific tanks currently supporting ICD-23 are listed in Appendix B, Table B-4.

6.6 WASTE FEED DELIVERY (WFD)

In December 2000, ORP signed a Waste Immobilization contract with the WTP contractor to convert LAW and HLW waste feed into an immobilized form. The WTP contract requires that CH2M HILL Hanford Group, Inc. on behalf of ORP, deliver feed in specified quantities and composition to the WTP contractor. In response to these requirements, the *Tank Farm Contractor Operation and Utilization Plan* (TFCOUP) (Kirkbride et al. 2000) was prepared. The TFCOUP establishes the baseline operating scenario for delivery of feed to the WTP contractor. The operating scenario is based on current knowledge of waste composition and chemistry. Additional data on waste quantity, physical and chemical characteristics, and transfer properties are needed.

The following is a list of DQOs required to deliver wastes and to verify that the wastes are within the LAW and HLW feed envelopes prior to staging of waste for delivery to the WTP contractor:

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for High Level Waste Feed Batch X;* HNF-1558, Revision 2 (Nguyen 1999a).

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for Low-Activity Waste Feed Batch X;* HNF-1796, Revision 2 (Nguyen 1999b).

- *Data Quality Objectives for RPP Privatization Phase 1: Tank Waste Transfer Control;* HNF-1802, Revision 1 (Banning 1999).

- *Characterization Data Needs for Development, Design and Operation of Retrieval Equipment Developed through the Data Quality Objective Process;* WHC-SD-WM-DQO-008, Revision 1 (Bloom and Nguyen 1996).

The TFCOUP (Kirkbride et al. 2000) provides an engineering analysis for the retrieval baseline that supports Waste Immobilization. In general, the document provides an analysis of LAW and HLW feed staging, the SST retrieval sequence, and the process summary basis. One requirement is completion and maintenance of Best-Basis Inventory numbers. The waste feed delivery program is dynamic and priorities, order of sampling, and/or specific tanks may change as program needs are further refined.

Specific tanks supporting Waste Feed Delivery, Phase 1 as identified at this time are listed in Appendix B, Table B-5.

6.7 SINGLE-SHELL TANK RETIREVAL AND CLOSURE

The SST retrieval and closure issue is being addressed by tasks to prepare to retrieve the SSTs early. The Consent Decree (Ecology and DOE 1999) mandates an aggressive SST retrieval schedule that is being supported by an operational analysis of the DST system and evaluation of alternative, highly efficient SST retrieval technologies. Retrieval system designs are being supported by the Retrieval Performance Evaluation (RPE) methodology. The RPE methodology is a risk-based approach to retrieval system design that considers meeting applicable regulatory requirements as a function of past tank leaks, potential leakage losses during retrieval operations, and tank waste residuals remaining after completion of waste retrieval operations (Banning 2001b).

Near-term "Limits of Technology" retrieval demonstrations include a low-volume, density-gradient, saltcake dissolution method in tank 241-S-112 (Mahoney and Banning 2001), a robotic crawler-based retrieval demonstration in tank 241-C-104, a fluidic mixing/pumping system retrieval demonstration in tank 241-S-102 and a saltcake dissolution demonstration in tank 241-U-107. A variety of leak detection and monitoring techniques including, but not limited to, electrical, electromagnetic, tracer gas, and radar techniques are also planned for demonstration for use during retrieval operations.

Planning for SST Retrieval is in its early stages. However, several tank sampling events have been identified in support of early retrieval.

Tank 241-S-112 was sampled during FY 2001. Sufficient data or archive material are available to address tanks 241-C-104 and 241-S-102 demonstrations. Sampling for tanks supporting other early SST Retrieval activities are projected in Appendix B, Table B-6. A more complete discussion of the SST retrieval strategy, sequence, and methods can be found in RPP-7078, *Single-Shell Tank Retrieval Sequence: Fiscal Year 2000 Update* (Garfield et al. 2001).

6.8 KEY PROCESSING PARAMETERS

Although identified as an issue in support of WTP design and feed delivery schedules in the FY 2002 TSB-WIRD facilitated workshop (see Section 5.0), sampling needs for this issue continue to be evaluated. An evaluation is being made as to whether currently available data are sufficient to address this issue. Waste blending studies are being conducted that may negate needs for further tank sampling. Pending the outcome of ongoing evaluations, no tank samples are planned.

6.9 HIGH LEVEL WASTE/LOW ACTIVITY WASTE (HLW/LAW) FEED DATA QUALITY OBJECTIVE (WPD)

The *Low-Activity Waste and High-Level Waste Feed Processing Data Quality Objectives* (Patello et al, 1999) identifies contract specification and preliminary planning information required to support the ORP management of the RPP. The DQO addresses source tank waste composition and its application to feed candidate selection, treatment and disposal functions. Information specific to the RPP regulatory permits and vitrified product Land Disposal Restriction (LDR) requirements and Delisting Petition are or will be addressed in other DQOs. Potential source tank wastes applicable to this DQO are derived from ORP direction and the *Tank Farm Contractor Operations and Utilization Plan* (TFCOUP) (Kirkbride et al, 2000). Characterization data have been gathered from many of the source tanks from earlier sampling events; however, new schedules, tank farm operations, source tank selection strategies, and on-going process testing and treatment plant design may affect the characterization needs. Data assessment for the completeness and quality of the available characterization data is an ongoing effort and also may impact the future sampling and characterization needs for the source tanks. Additional characterization may be needed to close out the DQO.

Specific tanks expected to support HLW/LAW feed issue are listed in Appendix B, Table B-7.

6.10 REGULATORY—DANGEROUS WASTE

Regulatory information on solid and liquid components of tank waste material is identified in the *Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis* (Mulkey 1999a). The dangerous waste sampling requirements are directed at SSTs and DSTs to verify treatment standard applicability at the time waste is shipped for treatment at the WTP. This information is also needed to help with designation of secondary wastes that are generated in the tank farms. More near-term information is needed on toxic metals including As, Se, Hg, Pb, Ba, Cr, Cd, Hg, and Ag. Information on the toxic metals is already available for many tanks and no sampling or analysis will be required for those tanks. If information is not available on these metals for a tank, when samples are taken for other issues, analysis will also be done on these metals on an opportunistic basis.

Specific tanks expected to support Regulatory Dangerous Waste sampling are listed in Appendix B, Table B-8.

6.11 POLYCHLORINATED BIPHENYLS ISSUE (PCB)

On August 31, 2000, Ecology, ORP, and EPA signed the "Framework Agreement for Management of Polychlorinated Biphenyls (PCBs) in Hanford Tank Waste" (Ecology et al. 2000). Ecology, ORP, and EPA agreed that some DST waste may be regulated under the *Toxic Substance Control Act* (TSCA) as PCB remediation waste. Quantification of PCBs in DSTs, SSTs, and incoming waste transfers is the key to ensuring that the DST and eventually Waste Treatment Plant PCB waste acceptance limits are met. These requirements will be evaluated in the risk-based approval application.

Characterization Plan for Establishing A PCB Baseline Inventory in Hanford Waste Tanks (Nguyen 2001) outlines the interim approach to obtain PCB data. A data quality objective is being developed to guide the PCB characterization effort. In February 2001, ORP issued a letter directing the Tank Farm Contractor to "perform PCB analysis of tank waste prior to resolution of all Data Quality Objectives (DQO) issues" (Short 2001). The letter provides an interim basis for starting PCB characterization. Pending the final release of a PCB DQO, PCB analysis is being conducted based on RPP-7614, *Interim Basis for PCB Sampling and Analysis*, (Banning 2001a).

A number of tanks will be selected for PCB analysis each year until a baseline inventory is established. PCB data will be obtained from analysis of existing archived samples, when available, in combination with new samples that will be collected to support other program needs (opportunistic analysis). Tanks for which opportunistic analyses are expected for PCBs in FY 2002 are identified in Appendix B, Section B11.0. PCB analyses of archive samples in the following fiscal years will be specified in an annual update of Nguyen (2001). The data will be used to establish a baseline inventory of PCBs in the DSTs. Appropriate transfer controls will be developed based on the baseline inventory to ensure PCB levels in the waste will not exceed waste acceptance criteria of the DSTs.

Specific tanks expected to be analyzed during FY 2002 to support PCBs are listed in Appendix B, Section B11.0.

6.12 BEST-BASIS INVENTORY

The need to obtain additional analyses to improve Best-Basis Inventory (BBI) calculations was discussed at the TSB-WIRD facilitated workshop, and, as a result, BBI was added to the list of FY 2002 characterization sampling issues. Subsequent to the workshop, a decision was made that BBI should not be a driver for sampling or analysis and a BBI specific DQO should not be prepared.

Programs needing BBI additional information will specify the information in program DQOs. Since BBI is not a driver for sampling, the BBI as a separate issue will not be developed further in this TSB-WIRD.

6.13 REGULATORY—AIR EMISSIONS

Characterization sampling and analysis of tank headspace is to be conducted according to *Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis* (Mulkey 1999b). Although this DQO applies to all DSTs and SSTs whether actively or passively ventilated, the current sampling needs for air emissions are directed to tanks that have an immediate need for an air permit because of planned activities related to disposal. Generally, these are tanks that will be disturbed as a result of equipment installation, disposal activities or interim stabilization measures.

Specific tanks supporting Air Emissions sampling are listed in Appendix B, Table B-9

6.14 MISCELLANEOUS FACILITIES

Miscellaneous facilities are facilities not categorized as SSTs, DSTs, or IMUSTs. Two miscellaneous facilities have been identified for near term "interim stabilization": 244-AR and 244-CR Vaults. One objective of "interim stabilization" is to remove pumpable liquids from vault tanks and sumps. The liquids are to be transferred to DSTs for storage. An assessment will be performed to ensure that the liquids are compatible with waste in the receiving tank. Sampling data will be needed for the assessment. Specific data requirements are identified in the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (Mulkey et al. 1999).

Sampling priority rankings and criteria for miscellaneous facilities are shown in Appendix B, Table B-10.

6.15 CERTIFICATION (ICD-19 AND ICD-20)

The Waste Immobilization contract between DOE and the WTP contractor requires that tank waste sent to the WTP contractor meet criteria based on the chemical concentrations of certain waste components. These criteria or envelope limits (Envelopes A, B, and C for LAW, Envelope D for HLW) require the concentration of specific components in the waste to be below a specified limit. For LAW, the maximum limit is a ratio defined as the analyte (mole) to sodium (mole) and for the radionuclides analyte (Bq) to sodium (mole). For HLW, the limit is the ratio defined as the analyte (grams) per 100 grams of the waste oxides and for the radionuclides, analyte (curies) per 100 grams of waste oxides. In addition to the Waste Immobilization contract, certification requirements are listed in ICD-19 for LAW (BNFL 2000a) and ICD-20 for HLW (BNFL 2000b).

Two certification DQOs will be developed. One of the DQOs covers certification sampling and analysis requirements for LAW. The second DQO covers HLW certification sampling and analysis requirements.

Certification will take place in the staging tanks prior to transferring the waste to the WTP contractor. In some cases, the source tank is the same as the staging tank. In other cases, the waste from a source tank will be transferred to a different staging tank.

All specific tanks and order of waste delivery to the WTP contractor have not been finalized. However, the staging tanks that have been identified at this time are listed in Appendix B, Table B-11. Certification sampling and analysis activities are not expected to begin until FY 2005.

6.16 SAFETY SCREENING

The *Tank Safety Screening Data Quality Objective* (Dukelow et al. 1995) was developed to ensure that tanks would be screened to determine if they should be categorized under one or more of the existing safety issues.

Recommendation actions for the major driver for safety screening (DNFSB Recommendation 93-5) have been completed and the DNFSB milestones met and closed (DNFSB 1999). See DOE-RL (1996) for background information about DNFSB Recommendation 93-5. The ferrocyanide, organic complexant, and organic solvent safety issues have been closed. The criticality unreviewed safety question (USQ) has also been closed. Several topical reports concerning these issues have been completed (see Section 4.2). The *Tank Waste Remediation System Final Safety Analysis Report (FSAR)* (Sandgren 2000) has also been issued and implemented and establishes proper controls on all tanks whether safety screened or not.

For technical prudence, the analysis requirements of the safety screening DQO will continue to be applied opportunistically to tanks not yet safety screened, but which are being sampled for some other purpose.

Appendix B, Table B-12 lists tanks that remain to be safety screened on an opportunistic basis. Since sampling is opportunistic, tanks listed are not included in the overall tank priority analysis in Appendix A.

6.17 INACTIVE MISCELLANEOUS UNDERGROUND STORAGE TANKS (IMUST)

An IMUST is a tank other than an SST or DST that is: (a) inactive, (b) radioactive, (c) underground or partially underground, and (d) not located within a major miscellaneous facility. (See Section 6.14 for miscellaneous facilities). There are currently about 70 IMUSTs identified on the Hanford Site. The IMUSTs assigned to RPP are listed in the *Tank Waste Remediation System Final Safety Analysis Report* (Sandgren 2000). Generally, Sandgren (2000) determined that IMUSTs pose no immediate threat to the Hanford Site workers or the public. There are no plans to characterize IMUSTs in the near term.

6.18 ISSUES DISCUSSED BUT NOT PRIORITIZED

During the facilitated workshop to determine issues for FY 2003 and beyond, the vadose zone was discussed as a potential future issue. A brief discussion of this potential future issue is included here for information.

Vadose Zone Potential Future Issue

The Tank Farm Vadose Zone (TFVZ) team is charged with developing an understanding of the impacts of past spills and leaks of tank waste on the vadose zone underlying the tank farms. This effort is focused on the eight tank farms (S, SX, B, BX, BY, T, TX, and TY) currently under *Resource Conservation and Recovery Act* (RCRA) applicability assessment. These tank farms were placed under RCRA assessment because their operations have led to potential or known impacts to groundwater quality. The investigations include review of historical leak-related documents, tank waste transfer records, groundwater monitoring and geological data, and historical and spectral gamma-ray logging data. The conceptual models developed from an integration of information from this broad database are then tested through field investigations and modeling exercises.

A member of the TFVZ team participated in the TSB-WIRD facilitated workshop held in January 2001 to ascertain the potential application of future SST waste characterization on the issues being addressed by the TFVZ team. It was concluded in the workshop that characterization of current SST wastes would provide very little, if any, insight to the understanding of historical SST leaks. Issues were raised as to the level of waste characterization that might be required to assess the potential impacts of future losses of tank waste to the soil column from tank leaks or losses during waste transfer operations. However, since a compatibility assessment is required to transfer waste, it is likely that compatibility analysis would be adequate to address questions about the inventory of radionuclides and chemicals lost during a spill associated with a waste transfer process.

The TFVZ team is developing and implementing a number of near-surface sampling and analysis techniques to investigate future tank waste losses to the vadose zone. Cone penetrometer technology is being implemented to collect spectral gamma-ray data. This methodology allows samples to be collected in selected regions of the sub-surface for laboratory analyses. Statistical techniques are being developed to convert gamma-ray data into inventory estimates.

7.0 TANK SAMPLING PRIORITIES

One of the purposes of the TSB-WIRD is to optimize use of characterization resources by establishing tank sampling priorities. To this end, a tank sampling priority list has been created. Priority numbers have been assigned for each of the tanks which are identified in this TSB-WIRD for sampling. All other tanks have zero priority at this time. The priority numbers become the basis for identifying tanks that, if sampled, will support resolution of important safety issues, develop the waste retrieval and disposal process, and support ongoing operations activities. This section describes how the priority numbers were developed. Tank priorities are in Appendix A. (Miscellaneous facilities are prioritized separately in Appendix B, Section B.14 of this TSB-WIRD.)

7.1 DEVELOPMENT OF SAMPLING PRIORITY NUMBERS

The following steps were used to develop sampling priority numbers for each tank:

- For each tank, a determination was made as to which issues apply in each of the following waste phases: solid, liquid, and vapor. (See Section 6.0 for a description of the issues.) For some tanks, more than one issue applies. (See Appendix B for tanks in the scope of each issue.)

- Because some tanks within an issue are more important (higher priority) than other tanks with regard to that issue, a determination was made as to whether each tank was high, medium, or low priority with regard to that issue compared to other tanks within that issue. High, medium, and low priorities were assigned according to when the tank needs to be sampled to meet the needs of the issue.

- An overall priority number was then developed for each tank for each of the three waste phases by summing the issue weights from Table 5-2 for the issues that apply to the waste phases in that tank. Before summing, each issue weight was multiplied by 5 if the tank is high priority for that issue, by a 3 if the tank is medium priority for that issue, or by a 1 if the tank is low priority for that issue. As an example, if the Operations Sampling issue and the ICD-23 issue apply to the solid phases in a tank and the tank is high priority for the Operations Sampling issue but low priority for the ICD-23 issue, the calculation of the raw priority number for solid phase samples are as follows for that tank: $(100 \times 5) + (79 \times 1) = 579$. This process is completed for each waste phase: solid, liquid, and vapor.

- Following calculation of the above raw priority numbers for each tank, the priority numbers were normalized with 100 being assigned to the highest priority tank for each waste phase.

The methodology above gives higher priority to tanks wherein sampling will address more than one issue. The priority also considers the relative weight of the issues that apply to a tank. In addition, the priority considers how important a tank is with regard to each issue that applies to it. The high, medium, or low ranking of a tank for an issue was made by the programs and/or tank coordinator experts on each tank in consideration of but not necessarily limited to the following: (1) when sampling is needed with higher priority to those needed sooner or (2) the waste forms and types in the tank with higher priority given to those tanks that best represent an issue. (See Appendix B for elaboration of the criteria for assigning high, medium, and low ranking for tanks within each issue.)

In general, a tank will have higher priority when:

- The tank has numerous issues that apply to it,
- The issues that apply to the tank are of high relative weight compared to other issues,
- The sampling needs are sooner rather than later, and
- The tank better represents an issue than another tank to which that issue applies.

Tank sampling priorities for solid, liquid, and vapor phase sampling are shown in Appendix A, Tables A-1, A-2, and A-3.

7.2 DESCRIPTION OF SAMPLING AND REPORTS TABLES

Table 7-1, *Summary of Sampling by Issue* provides information on the number of tanks identified for sampling by issue and by fiscal year and the number of tanks scheduled for sampling in FY 2002. A modified version of Table 7-1 is updated and included in each quarterly report to show sampling actual progress in comparison to samples scheduled. Key features of Table 7-1 include:

- **Total Tank Samplings Identified for Issue:** The total number of tanks currently identified for sampling in support of each issue to meet milestones and commitments. Planning in subsequent years may cause this total to increase or decrease.
- **Tanks Identified FY 20xx:** The table shows the number of tanks currently identified (by issue) in each fiscal year to meet milestones and commitments.
- **Tanks Scheduled FY 2002:** The table shows the number of tanks scheduled (by issue) in FY 2002 to meet milestones and commitments. The scheduled number may differ from the FY 2002 number identified because the scheduled number is dependent on available resources.

Table 7-1. Summary of Sampling by Issue

	Ops. Samples	Evap. Ops.	Interim Stab.	Corrosion Control	ICD-23	WFD	SST Retrieval & Closure	Key Process Params.	WPD	Danger. Wastes	PCBs	Air Emiss.	Misc. Facilities	Waste Certif. (ICD-19 & ICD-20)	Safety Screen
Total Tank Samplings Identified for Issue	4	7	0	4	10	12	3	0	3	20	OP	5	2	12	OP
Tanks Identified FY2002	1	2	0	4	2	1	1	0	0	0	OP	0	1	0	OP
Tanks Identified FY2003	1	3	0	0	6	5	0	0	1	0	OP	3	1	0	OP
Tanks Identified FY2004 and beyond	2	2	0	TBD	2	6	2	TBD	2	20	OP	2	TBD	12	OP
Tanks Scheduled FY2002	1	2	0	4	2	1	1	0	0	0	OP	0	1	0	OP

Notes: Air Emiss. = Air Emissions
Danger. Wastes = Dangerous Wastes
Evap. Ops. = evaporator operations
ICD = interface control document
Interim Stab. = Interim Stabilization
Misc. = miscellaneous
OP = opportunistic analysis
Ops. Samples = operations samples
Params. = parameters
PCBs = polychlorinated biphenyls
SST = single-shell tank
TBD = to be determined
Waste Certif. = Waste Certification
WFD = Waste Feed Delivery
WPD = Waste Processing Development

Specific tanks are not identified in Table 7-1 because of ongoing changes in program needs and operational considerations. However, specific tanks currently expected to support each issue are shown in Appendix B. If an archived sample meets analytical needs for a tank listed, the TSB-WIRD commitment for that tank is considered to have been met without sampling.

Table 7-2 shows the nine Tank Characterization Reports (TCRs) planned for FY 2002. The table also indicates the issues that will be addressed by each TCR planned in FY 2002.

Table 7-2. Planned Tank Characterization Reports and Issues Addressed

Tank	Issues Addressed
SY-102	WFD, WPD, AE, PCB
U-111	Compatibility
AP-104	ICD-23, WFD, WPD, AE, PCB
C-107	WFD, WPD, SST retrieval, PCB
S-112	Safety screening, SST retrieval, RPE, Compatibility, PCB
C-103	Compatibility, PCB
AN-106	AE, Corrosion Control, PCB
S-109	Compatibility
U-107	SST retrieval

Notes:

AE = air emissions
ICD-23 = Interface Control Document 23
PCB = polychlorinated biphenyls
RPE = Retrieval Performance Evaluation
SST = single-shell tank
WFD = Waste Feed Delivery
WPD = Waste Processing Development

Tanks listed above are listed in alphabetical order and are not necessarily listed in the order the TCRs will be completed. Sampling for these tanks was conducted in FY 2001 with data becoming available in FY 2002 for TCR development.

7.3 USE OF PRIORITY TABLES IN CHARACTERIZATION SCHEDULING

Once characterization sampling requirements are prioritized, the sampling requirements are reflected into an operational sampling schedule that is updated and revised for configuration control as conditions in the field or program needs change. It is not always possible (or desirable) to sample in the exact order of the sampling priority listed in the tables of Appendix A. When creating the sampling schedule, consideration is given to: (1) the priority number of the tank(s) and (2) operational and programmatic constraints.

The first consideration when creating the sampling schedule is to schedule tanks with the highest priority numbers possible in order to support the maximum number of high weight issues. The second consideration is operational and programmatic constraints. Some of the most common operational and programmatic considerations are:

- **Tank Farm Operations**: If a tank is scheduled for other operations such as an immediate tank transfer or caustic additions, it may be necessary to delay characterization sampling for other issues regardless of the sampling priority of the tank.

- **Location Considerations**: Moving the sampling equipment from farm to farm is time consuming and costly because of considerations of worker exposure and radiological control. It may be beneficial to sample tanks of lower priority while the equipment is positioned in a farm rather than to return at a later date.

Operational and programmatic considerations are not necessarily restricted to those described above.

8.0 REPORTING CHARACTERIZATION PROGRESS

Two tools are provided in the TSB-WIRD to measure characterization progress during FY 2002. The tools are:

- Table 7-1 provides a summary of the total number of tanks identified to be sampled in FY 2002 and out-years to satisfy the issues indicated and to meet milestone commitments. (See "Total Tank Samplings Identified for Issue" row in Table 7-1.) The "Tanks Identified FY 2002" row shows the number in FY 2002 to meet ultimate milestones. The table also shows the number of tanks scheduled (projected) to be sampled for each issue during FY 2002 based on current projections of sampling capabilities. (See "Total Tanks Scheduled FY 2002" row.) Note that the tanks needed for an issue may be more or less than the tanks scheduled for an issue because the tanks scheduled are based on operational and fiscal considerations. Progress on performing characterization sampling on tanks scheduled is reported in quarterly reports to ORP and Ecology.

- Table 7-2 provides information on the number of TCRs planned and issues addressed by each TCR. The status of TCR development and release will be included in the TSB-WIRD quarterly reports.

9.0 DESCRIPTION OF DELIVERABLES AND ACCEPTANCE CRITERIA

The primary focus in acquiring characterization information is to sample tanks, analyze samples, and interpret the data in order to meet the requirements of safe storage, waste retrieval, waste disposal, and operations functions. In this process, a number of deliverables are due to Ecology. The deliverables include TCRs, the TSB-WIRD, Tank Waste Information Network (TWINS) analytical results, quarterly reports, and a year-end fourth quarter report, due in October of the next fiscal year.

9.1 CHARACTERIZATION PROJECT SAMPLING ACTIVITIES

This section outlines the types of sampling performed by the Characterization Project and is divided into condensed phase and vapor phase sampling sections.

Condensed Phase Sampling

Core Sampling: Core sampling provides a sample that represents the waste depth in the tank regardless of whether the waste is in the liquid or solid phase. Core sampling may be performed in push mode, rotary mode, by auger, or by other appropriate sampling devices that may be devised.

Grab Sampling: Grab sampling is normally used to obtain a liquid sample or a sample of salt or sludge solids that are suspended in a slurry. Grab sampling can obtain liquid samples from the surface of the tank or below the surface as long as there is no solid layer to obstruct the sampler. Grab samples are normally used to satisfy requirements connected with operations issues, particularly waste compatibility, evaporator operations, and caustic mitigation. Grab samples may also be used to provide Waste Immobilization LAW samples to the WTP vendors. When no solid waste layers are encountered, grab samples can be used effectively.

Vapor Phase Sampling

Vapor sampling is used to obtain a gas sample from inside the tank dome/head space above the surface of the solid or liquid phase or from stacks as appropriate. Vapor samples are taken to meet requirements in the air emissions regulatory DQO, to collect industrial hygiene data, or to support special projects or emerging issues.

9.2 TANK CHARACTERIZATION REPORTS

Tank Characterization Reports (TCRs) are used to report and interpret data collected from tanks and evaluate the extent to which the data satisfy DQO requirements. The TCRs also report the "best-basis" estimate of the total inventory of various chemicals and radionuclides within a tank.

The TCRs are no longer released in "hard copy" form but are available electronically via a tool called the automated TCR. The automated TCR, available on the local area network and the internet, allows a user to assemble a custom made TCR by selecting from a menu of standard data reports, including analytical data, vapor data, best-basis inventory data, tank level and temperature data, etc. The automated TCR also provides the user with a question and answer format Tank Interpretive Report (TIR). The TIR interprets data by way of answers to nine (9) questions including questions regarding: tank information drivers, tank history, tank comparisons, disposal implications, scientist's assessment of data quality and quantity, unique aspects of the tank, means and variances, best-basis inventory derivations for the tank, and tank references. The automated TCR also provides the user with a tank-specific reference list with electronic links to references related to a tank. The automated TCR draws data from a configuration-controlled database containing analytical data for tanks called the Tank Waste Information Network System (TWINS). TWINS is accessible via the Internet at http://twins.pnl.gov:8001.

9.3 ACCEPTANCE CRITERIA FOR ECOLOGY DELIVERABLES

Technical Sampling Basis and Waste Information Requirements Document (TSB-WIRD):

Information needs are defined in the TSB-WIRD that is prepared and submitted to Ecology annually. The document identifies characterization deliverables to support safe storage, waste retrieval, waste disposal, and operations. The TSB-WIRD describes characterization deliverables to be issued based on existing TPA milestones, other milestones, and other directive documents. The document also identifies and prioritizes characterization issues, and prioritizes tanks for sampling.

The TSB-WIRD and the other deliverables discussed in this section (9.3) shall conform in quality to the standards in the *CPO Requirements Planning and Support and Data Development and Interpretation Instruction Manual,* Section 5.0, "Guidelines for Document Preparation" (Adams 2001b).

The portion of the TSB-WIRD that identifies tank waste characterization activities outside the scope of the TPA shall not be subject to Ecology approval or concurrence, but shall be considered for information only.

Quarterly Reports:

Quarterly reports are provided through DOE-ORP to Ecology to give status on characterization progress. The quarterly reports include use of the measures of progress described in Section 8.0. In general, the quarterly reports include the following elements:

- Discussion of tanks sampled (by issue) for comparison with tanks scheduled for sampling (by issue).
- Discussion of the status of TCRs released.
- Discussion of issues encountered.
- Prediction of sampling and TCR production for the next quarter.
- Discussion of other information, as deemed appropriate, to report characterization status and progress.

Characterization Deliverable Report:

Each fiscal year, a final year-end summary report reflecting characterization deliverables identified in the most recent TSB-WIRD is prepared to report the extent to which deliverables were completed as of September 30 of the year. The report identifies specific issues and/or tanks to which the deliverables were applied. The final report builds upon information provided in the first three quarterly reports and is included in the fourth quarterly report due October 31 of the next fiscal year.

Data Management Deliverables:

Currently, the TPA requires that tank characterization data be provided to Ecology and EPA offsite via electronic means. This requirement is met by use of TWINS. TWINS is accessible via the internet at http://twins.pnl.gov:8001. Analytical data concerning tank contents are posted to TWINS within seven working days after release of the final analytical data package from the laboratory. Data entry into the TWINS is regulated by *Standard Electronic Formats (Adams 1999 and Adams 2000.)*

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APPENDIX A

A.0 TANK SAMPLING PRIORITY TABLES

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Table A-1. Tank Sampling Priority Rankings by Waste Phase[1]

Solid		Liquid		Vapor	
Tank	Priority	Tank	Priority	Tank	Priority
AW-103	100	AW-103	100	C-104	100
AN-103	40	AY-101	71	S-102	100
AZ-101	30	SY-102	63	S-112	100
AZ-102	30	AN-101	59	AW-101	33
AN-104	29	AN-102	50	AW-104	33
AN-105	29	AN-107	50		
AN-101	27	AY-102	50		
S-102	27	AP-107	48		
AY-101	27	AW-106	48		
AW-104	18	AN-103	42		
S-106	15	U-107	36		
SY-102	13	AN-104	30		
S-103	8	AN-105	30		
S-108	8	AP-101	30		
C-107	7	AZ-101	30		
AY-102	6	AZ-102	30		
AN-102	5	AN-106	29		
AN-107	5	AP-105	27		
AP-105	5	AP-106	27		
AW-101	5	AP-104	25		
C-104	5	AP-102	23		
SY-101	5	AW-104	18		
		AP-108	12		
		AW-105	10		
		C-107	7		
		S-106	7		
		AW-101	5		
		C-104	5		
		S-102	5		
		SY-101	5		

NOTE:

[1]Only tanks with identified issues are listed in this table.

Table A-2. Tank Sampling Priority Rankings by Tank[1]

Tank	Solids Priority	Liquid Priority	Vapor Priority
AN-101	27	59	0
AN-102	5	50	0
AN-103	40	42	0
AN-104	29	30	0
AN-105	29	30	0
AN-106	0	29	0
AN-107	5	50	0
AP-101	0	30	0
AP-102	0	23	0
AP-104	0	25	0
AP-105	5	27	0
AP-106	0	27	0
AP-107	0	48	0
AP-108	0	12	0
AW-101	5	5	33
AW-103	100	100	0
AW-104	18	18	33
AW-105	0	10	0
AW-106	0	48	0

Tank	Solids Priority	Liquid Priority	Vapor Priority
AY-101	27	71	0
AY-102	6	50	0
AZ-101	30	30	0
AZ-102	30	30	0
C-104	5	5	100
C-107	7	7	0
S-102	27	5	100
S-103	8	0	0
S-106	15	7	0
S-108	8	0	0
S-112	0	0	100
SY-101	5	5	0
SY-102	13	63	0
U-107	0	36	0

NOTE:

[1]Only tanks with identified issues are listed in this table.

Table A-3. Tank Sampling Priority Rankings by Issue[1] (2 sheets)

Tank ↓	Solids Priority	Liquid Priority	Vapor Priority	Ops. Samples	Tank Rank	Evap. Ops.	Tank Rank	Interim Stab.	Tank Rank	Corrosion Control	Tank Rank	ICD-28	Tank Rank	WFD	Tank Rank	SST Retrieval & Closure	Tank Rank	Key Process Params.	Tank Rank
Issue Weight →				100		96		92		88		79		76		70		61	
AN-101	27	89	0	L	3									SL	3				
AN-102	5	89	0							L	5								
AN-103	49	42	0									SL	5						
AN-104	29	39	0									SL	3						
AN-105	29	39	0									SL	3						
AN-106	0	29	0			L	3												
AN-107	5	89	0							L	5								
AP-101	0	39	0									L	3						
AP-102	0	23	0											L	3				
AP-104	0	29	0									L	3						
AP-105	5	27	0											L	3				
AP-106	0	27	0											L	3				
AP-107	0	46	0			L	5												
AP-108	0	12	0											L	1				
AW-101	5	5	33																
AW-103	100	100	0									SL	5	SL	5				
AW-104	10	10	33											SL	1				
AW-105	0	10	0	L	1														
AW-106	0	46	0			L	5												
AY-101	27	71	0							L	5	SL	1	SL	1				
AY-102	0	89	0							L	5								
AZ-101	39	39	0									SL	3						
AZ-102	39	39	0									SL	3						
C-104	5	5	100																
C-107	7	7	0													SL	1		
S-102	27	5	100											S	3				
S-103	0	0	0											S	1				
S-106	16	7	0											S	1	SL	1		
S-108	0	0	0											S	1				
S-112	0	0	100																
SY-101	5	5	0																
SY-102	13	63	0	L	5							SL	1						
U-107	0	39	0													L	5		

Key: S = Solid, L = Liquid, V = Vapor

Tank Rank: 5 = High Value, 3 = Medium Value, 1 = Low Value

[1]Only tanks with identified issues are listed in this table.

Table A-3. Tank Sampling Priority Rankings by Issue[1] (2 sheets)

Tank	Solids Priority	Liquid Priority	Vapor Priority	WPD	Tank Rank	Danger. Wastes	Tank Rank	PCBs	Tank Rank	Best-Basis Inventory	Tank Rank	Air Emiss.	Tank Rank	Misc. Facilities	Tank Rank	Waste Certif. (ICD-18 & ICD-28)	Tank Rank	Safety Screen	Tank Rank
Issue Weight →				66		46		42		37		34		22		13		9	
AN-101	27	88	0			SL	1									L	1		
AN-102	0	88	0			SL	1									L	1		
AN-103	40	42	0													L	1		
AN-104	28	28	0			SL	1									L	1		
AN-105	20	30	0			SL	1									L	1		
AN-106	0	39	0																
AN-107	5	88	0			SL	1									L	1		
AP-101	0	38	0			L	1									L	1		
AP-102	0	23	0																
AP-104	0	25	0													L	1		
AP-105	5	27	0			SL	1												
AP-106	0	27	0			L	1												
AP-107	0	48	0																
AP-108	0	12	0			L	1												
AW-101	5	5	23			SL	1					V	1						
AW-103	100	100	0	SL	3	SL	1												
AW-104	18	18	33	SL	1	SL	1					V	1						
AW-105	0	18	0																
AW-106	0	48	0																
AY-101	27	71	0	SL	1	SL	1									SL	1		
AY-102	0	89	0			SL	1									SL	1		
AZ-101	38	38	0			SL	1									SL	1		
AZ-102	38	38	0			SL	1									SL	1		
C-104	5	5	100			SL	1					V	3						
C-107	7	7	0																
S-102	27	5	100			SL	1					V	3						
S-103	0	0	0																
S-106	15	7	0																
S-108	0	0	0																
S-112	0	0	100									V	3						
SY-101	5	5	0			SL	1												
SY-102	13	63	0			SL	1												
U-107	0	38	0																

Key: S = Solid, L = Liquid, V = Vapor
Tank Rank: 5 = High Value, 3 = Medium Value, 1 = Low Value

[1]Only tanks with identified issues are listed in this table.

APPENDIX B

B.0 PRIORITIZATION OF TANKS WITHIN ISSUES

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APPENDIX B

PRIORITIZATION OF TANKS WITHIN ISSUES

This appendix contains high (H), medium (M), or low (L) rankings for each tank within each issue. High means a sample is identified in FY 2002, medium means a sample is identified in FY 2003, and low means a sample is identified in FY 2004 or beyond. The criteria for establishing the ranking of each tank are also given. The phases of waste to which the rankings apply can be found in Tables A-1, A-2, and A-3 along with the normalized priority numbers for each waste phase by tank.

If an archived sample is later determined to meet analytical needs for a tank listed, the TSB-WIRD commitment for that tank will be considered met without further sampling.

Some of the tanks identified for sampling in FY 2002 may be sampled late in FY 2001. In such cases, credit will be taken against the FY 2002 requirement.

B1.0 OPERATIONS SAMPLING

Operations sampling covers compatibility sampling for tank transfers and cross-site transfers, plus other miscellaneous operations requirements.

Tanks listed below are based on considerations for positioning of salt well liquor waste from interim stabilization operations, receipt of miscellaneous wastes, and positioning of wastes in preparation for eventual retrieval operations.

Table B-1 lists known and planned waste transfers that will need new data from compatibility sampling. The table is not intended to be a list of all planned waste transfers, but rather, only those for which sufficient compatibility data does not already exist. Other miscellaneous operations sampling (see Section 6.1.2) will be conducted on an "operationally contingent" basis as needs are identified.

Table B-1. Double-Shell Tank to Double-Shell Tank Transfer Rankings

TANK	RANKING	RANKING CRITERIA
SY-102	H	Cross site transfer in FY 2002
AN-101	M	Transfer compatibility in FY 2003
SY-102	L	Cross site transfer in FY 2004 or beyond
AW-105	L	Cross site transfer in FY 2004 or beyond

B2.0 EVAPORATOR OPERATIONS

Evaporator operation includes staging of waste in an evaporator candidate feed tank or processing direct from a source tank. Tanks upon which the Evaporator DQO is to be applied in FY 2002 are listed in Table B-2. The 242-A Evaporator slurry sampler has failed, and is expected to remain out of service until 2004. During the interim period, the concentrated slurry samples normally obtained by the 242-A Evaporator system will be obtained by the characterization project from the slurry receiver tank, 241-AW-106, at the end of each Evaporator campaign.

Table B-2. Ranking of Tanks for Evaporator Operations Issue

TANK	RANKING	RANKING CRITERIA
AP-107	H	Sampling of feed tank in FY 2002
AW-106	H (1)	Sampling of evaporator slurry in FY 2002
AN-106	M	Sampling of feed tank in FY 2003
AP-107	M	Sampling of feed tank in FY 2003
AW-106	M	Sampling of evaporator slurry in FY 2003
AP-107	L	Sampling of feed tank in FY 2004 and beyond
AW-106	L	Sampling of evaporator slurry in FY 2004 and beyond

Notes:

(1) Post-campaign slurry sample required at the end of each campaign by characterization until 242-A evaporator slurry sampler is repaired.

B3.0 INTERIM STABILIZATION

Since tanks S-112 and C-103 are expected to be sampled in FY 2001, no samples will be needed in FY 2002 for this issue because sampling for the consent decree requirements will have been satisfied in FY 2001.

B4.0 CHEMISTRY FOR CORROSION CONTROL

Current rankings and ranking criteria for tanks to be sampled for the chemistry for corrosion control issue are shown in Table B-3. See comments regarding additional sampling in Section 6.4.

Table B-3. Ranking of Tanks for Corrosion Control

TANK	RANKING	RANKING CRITERIA
AN-102	H	Grab sample(s)- FY 2002
AN-107	H	Grab sample(s)- FY 2002
AY-101	H	Grab sample(s)- FY 2002
AY-102	H	Grab sample(s)- FY 2002

B5.0 INTERFACE CONTROL DOCUMENT 23 (WTP REGULATORY AND PROCESS TESTING)

Tank samples within this issue are required for regulatory, process verification and waste form qualification tests. Rankings and ranking criteria for tanks to be sampled for the ICD-23 issue are given in Table B-4.

Table B-4. Ranking of Tanks for ICD-23 Issue

TANK	RANKING	RANKING CRITERIA
Tank samples required for Step 2 of the Waste Immobilization Regulatory DQO (1)		
AN-103	H	Sample planned in FY 2002
AN-104	M	Sample planned in FY 2003
AN-105	M	Sample planned in FY 2003
AP-101	M	Sample planned in FY 2003
AP-104	M	Sample planned after AP-104 is filled with SY-101 material. Assume FY 2003.
AZ-101	M	Sample planned in FY 2003
AZ-102	M	Sample planned in FY 2003
SY-102	L	Sample planned in FY 2004 or beyond.
Tank samples required for Process Verification and Waste Form Qualification Tests		
AW-103 (2)	H	Sample planned in August 2002. New core sample augmented by archive material if needed.
AY-101/C-104	L	Sample planned after retrieval of C-104 into AY-101.

Notes:

(1) Tanks remain under negotiation pending results of Step 1 of the Regulatory DQO.
(2) Assumes tank AW-103 has been filled and staged.

B6.0 WASTE FEED DELIVERY (WFD)

The waste feed delivery program is dynamic and priorities, order of sampling, and/or specific tanks may change as program needs are further defined. Table B-5 contains the ranking and ranking criteria for tanks to be sampled for this issue known at this time.

Table B-5. Tank Rankings for Waste Feed Delivery, Phase 1

TANK	RANKING	RANKING CRITERIA
AW-103 (1)	H	Sample planned in August 2002.
AN-101	M	Sample needed after tank staged. Estimated for FY 2003.
AP-102	M	Sample needed after tank staged. Estimated for FY 2003.
AP-105	M	Sample needed after tank staged. Estimated for FY 2003.
AP-106	M	Sample needed after tank staged. Estimated for FY 2003.
S-102	M	Sample potentially needed in FY 2003.
AP-108	L	Sample needed in FY 2004 or beyond.
AW-104	L	Sample needed in FY 2004 or beyond.
AY-101	L	Sample needed in FY 2004 or beyond after retrieval of C-104 into AY-101.
S-103	L	Sample needed in FY 2004 or beyond.
S-106	L	Sample needed in FY 2004 or beyond.
S-108	L	Sample needed in FY 2004 or beyond.

Note: (1) Assumes tank AW-103 has been filled and staged.

B7.0 SST RETRIEVAL AND CLOSURE

Rankings and ranking criteria for tanks to be sampled in the SST Retrieval and Closure issue are given in Table B-6.

Table B-6. Ranking of Tanks for Single-Shell Tank Retrieval Activities

TANKS	RANKING	RANKING CRITERIA
U-107	H	Samples needed in FY 2002 to support saltcake dissolution demonstration.
S-106	L	Samples needed in FY 2004 or beyond to support retrieval system design.
C-107	L	Samples needed in FY 2004 or beyond to support retrieval system design.

Note: Currently, studies show there is sufficient data or archive material already available to address needs for near-term C-104 and S-102 demonstration activities.

B8.0 KEY PROCESSING PARAMETERS

Although identified as an issue in the FY 2002 TSB-WIRD facilitated workshop (see Section 5.0), sampling needs for this issue are being evaluated. Pending outcome of ongoing evaluations, no samples are currently planned.

B9.0 HIGH-LEVEL WASTE/LOW-ACTIVITY WASTE (HLW/LAW) FEED PROCESSING DATA QUALITY OBJECTIVE (WPD)

Current sampling and analysis priorities are assigned based on start of vitrification in FY 2006 and planning for LAW and HLW sequence of feed delivery to the WTP contractor. As plans are solidified, there may be changes in the sampling priorities.

Numerous tanks have already been sampled and have been or are in the process of being analyzed for the WPD issue. For most tanks, sufficient archive is available if further analyses are needed. Tanks listed in Table B-7 are those currently remaining to be sampled. If some previously sampled tanks should need re-sampling, they will be incorporated as appropriate.

Tank priorities are based upon when the waste in the respective tanks becomes static.

Table B-7. Ranking of Tanks for Waste Processing Development

TANKS	RANKING	RANKING CRITERIA
AW-103	M	HLW feed source.
AW-104 (1)	L	LAW feed source, salt well liquor. HLW feed source tank sampling needed FY 2005.
AY-101 (2)	L	HLW feed source tank.

Notes:

(1) Core and supernate after salt well liquor added.
(2) Collect sample after C-104 waste is transferred to AY-101.

B10.0 REGULATORY—DANGEROUS WASTE

Ranking and ranking criteria for tanks to be sampled prior to transfer to the WTP for the regulatory dangerous waste issue are given in Table B-8.

Table B-8. Tank Rankings for Dangerous Waste

TANK	RANKING	RANKING CRITERIA
AN-101	L	Waste designation for feed delivery in FY 2004 or beyond.
AN-102	L	Waste designation for feed delivery in FY 2004 or beyond.
AN-104	L	Waste designation for feed delivery in FY 2004 or beyond.
AN-105	L	Waste designation for feed delivery in FY 2004 or beyond.
AN-107	L	Waste designation for feed delivery in FY 2004 or beyond.
AP-101	L	Waste designation for feed delivery in FY 2004 or beyond.
AP-105	L	Waste designation for feed delivery in FY 2004 or beyond.
AP-106	L	Waste designation for feed delivery in FY 2004 or beyond.
AP-108	L	Waste designation for feed delivery in FY 2004 or beyond.
AW-101	L	Waste designation for feed delivery in FY 2004 or beyond.
AW-103	L	Waste designation for feed delivery in FY 2004 or beyond.
AW-104	L	Waste designation for feed delivery in FY 2004 or beyond.
AY-101	L	Waste designation for feed delivery in FY 2004 or beyond.
AY-102	L	Waste designation for feed delivery in FY 2004 or beyond.
AZ-101	L	Waste designation for feed delivery in FY 2004 or beyond.
AZ-102	L	Waste designation for feed delivery in FY 2004 or beyond.
AY-101/C-104 (1)	L	Waste designation for feed delivery in FY 2004 or beyond.
AP-101/S-102 (2)	L	Waste designation for feed delivery in FY 2004 or beyond.
SY-101	L	Waste designation for feed delivery in FY 2004 or beyond.
SY-102	L	Waste designation for feed delivery in FY 2004 or beyond.

Notes:

(1) Sample tank AY-101 containing waste transferred from tank C-104.
(2) Sample tank AP-101 contain waste transferred from tank S-102.

B11.0 POLYCHLORINATED BIPHENYLS (PCB)

Tanks being sampled for other issues will be opportunistically analyzed for PCBs. Tanks expected for opportunistic analysis in FY 2002 include tanks SY-102, AW-103, AY-101, and U-107. Archived samples will be used for other PCB analysis up to a total of 24 tanks per year.

B12.0 BEST BASIS INVENTORY

The need to obtain additional analyses to improve Best Basis Inventory (BBI) calculations was discussed at the TSB-WIRD facilitated workshop, and, as a result, BBI was added to the list of FY 2002 characterization sampling issues. Subsequent to the workshop, a decision was made to not develop a separate BBI specific DQO. Rather, programs using BBI information shall identify in their own program DQOs, all analyses needed to produce a BBI. Since there will be no BBI specific DQO, the BBI as a separate issue will not be developed further in this TSB-WIRD.

B13.0 REGULATORY—AIR EMISSIONS

Current planning calls for air emissions sampling to support the Notice of Construction documents for construction projects. Table B-9 shows the ranking and ranking criteria for regulatory air emissions sampling.

Table B-9. Ranking for Air Emissions

TANKS	RANKING	RANKING CRITERIA
C-104	M	Construction projects. Prepare NOCs.
S-102	M	Construction projects. Prepare NOCs.
S-112	M	Construction projects. Prepare NOCs.
AW-101	L	Construction Projects. Prepare NOCs
AW-104	L	Construction Projects. Prepare NOCs

Notes:

NOC = Notice of Construction

B14.0 MISCELLANEOUS FACILITIES

Table B-10 provides priority rankings for sampling for miscellaneous facilities.

Table B-10. Ranking for Miscellaneous Facilities

FACILITY	RANKING	RANKING CRITERIA
244-AR Vault	H	Interim stabilization of facility. Sample needed in FY 2002.
244-CR Vault	M	Interim stabilization of facility. Sample needed in FY 2003.

B15.0 CERTIFICATION (ICD 19 AND ICD-20)

Waste certification sampling and analysis of the first staging tank is not scheduled to begin until FY 2005 and the DQOs for the certification are not yet completed. For these reasons, all of the tanks have a low ranking.

Table B-11 shows planned Phase 1 initial order staging tanks that will require sampling before waste is transferred to the WTP contractor. Some staging tanks will be used for later batches of waste. In these cases the tank is not listed more than once, but the planned sampling dates for the later batches of waste staged in that tank are listed.

Table B-11. Ranking of Waste Certification Staging Tanks

TANK	RANKING	TYPE OF WASTE	CERTIFICATION DATE FISCAL YEAR
AN-101	L	LAW	2010 2014
AN-102	L	LAW	2009 2014 2017
AN-103	L	LAW	2017
AN-104	L	LAW	2010
AN-105	L	LAW	2014 2018
AN-107	L	LAW	2013
AP-101	L	LAW	2005
AP-104	L	LAW	2009
AY-101	L	HLW	2010
AY-102	L	HLW	2009
AZ-101	L	HLW	2005 2014
AZ-102	L	HLW	2007

Notes:

LAW—grab sample
HLW—core sample.

B16.0 SAFETY SCREENING

Table B-12 shows tanks not yet sampled for or not sufficiently sampled for safety screening. These tanks are analyzed opportunistically. The Safety Screening DQO is applied only if the tank is being sampled for some other issue. They, therefore, have no priority ranking in the Appendix A tables.

Table B-12. Tanks for Safety Screening Data Quality Objective Analysis

Item No.	Tank ID No	Item No.	Tank ID No.
1	A-103	21	TX-101
2	A-104	22	TX-102
3	A-105	23	TX-103
4	A-106	24	TX-105
5	B-105	25	TX-106
6	BX-102	26	TX-108
7	BY-105 (1)	27	TX-109
8	BY-106 (1)	28	TX-110
9	C-102 (1)	29	TX-111
10	S-103	30	TX-112
11	S-108	31	TX-114
12	SX-104	32	TX-115
13	SX-107	33	TX-116
14	SX-109	34	TX-117
15	SX-110	35	TY-101
16	SX-111	36	TY-102
17	SX-112	37	TY-103
18	SX-114	38	TY-105
19	T-101	39	U-101 (1)
20	T-103 (1)	40	U-104
		41	U-111 (1)

Note:

(1) Tank has been sampled, but not sufficiently for safety screening.

B17.0 INACTIVE MISCELLANEOUS UNDERGROUND STORAGE TANK

There are no plans to obtain characterization data for IMUSTs in the near term.

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APPENDIX C

C.0 DATA QUALITY OBJECTIVE DOCUMENTS

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APPENDIX C

DATA QUALITY OBJECTIVE DOCUMENTS

The DQOs define the work scope required to address a specific issue and contain guidance on the type and extent of characterization necessary to resolve the issue. Each River Protection Project (RPP) program issue has an associated DQO that defines the questions, decisions to be made, required information, and the quality of data required to resolve the questions. Table C-1 lists the RPP DQOs and their status. An active DQO is one wherein the data are still being collected to satisfy it or it is a DQO in preparation that has not yet been released. (For example, the two waste certification DQOs listed in Table C-1 are subject to being prepared.) An inactive DQO is one against which data are no longer being collected.

Although a DQO may be considered closed or closing for SST/DST issues, it may remain active for inactive miscellaneous underground storage tanks (IMUST) or other activities. A DQO currently inactive could again become active if new issues or questions arise.

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
242-A Evaporator HNF-SD-WM-DQO-014	*242-A Evaporator Data Quality Objectives*	Covers information needs for Evaporator operations.	ECN-653669 issued 1/14/00 Rev. 2 issued 4/3/98 Rev. 1A issued 5/16/95 Rev. 1 issued 4/25/95 Rev. 0 issued 9/29/94
Air Emission Regulatory DQO WHC-SD-WM-DQO-021	*Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis*	Covers information needs for tank farms air regulatory compliance and permitting.	Rev. 1 issued 7/6/99 Rev. 0 issued 11/30/95

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
AZ-101 Mixer Pump DQO RPP- 5498	*Tank 241-AZ-101 Mixer Pump Test Data Quality Objective*	Covers information needed during the mixer pump test in tank 241-AZ-101. This document only covers a particular test. **INACTIVE**	Rev. 2 issued 12/18/00 Rev. 1 issued 2/2/00 Rev. 0 issued 1/10/00
C-103 Dip Sample PNL-8871 UC-510	*Organic Layer Sampling for SST 241-C-103 Background, and Data Quality Objectives, and Analytical Plan*	Covers information needs to resolve the specific issue of the organic layer in tank 241-C-103. **INACTIVE**	Issued 8/93
C-103 Vapor WHC-EP-0774	*Tank 241-C-103 Vapor and Gas Sampling Data Quality Objectives*	Covers information needs to resolve the vapor problem in tank 241-C-103. **INACTIVE**	Rev. 0 issued 2/28/94 CCRN 9451694
C-106 High Heat WHC-SD-WM-DQO-015 Originally WHC-EP-0723	*Tank 241-C-106 Sampling Data Requirements Developed Through the DQO Process*	Covers information needs to help resolve high heat issue in C-106. **INACTIVE**	Rev. 0 issued 1/20/94 as WHC-EP-0723 CCRN 9450464
Crust Burn Flammable Gas WHC-SD-WM-DQO-003	*Data Requirements Required Through the Data Quality Objectives Process for the Crust Burn Issue Associated with Flammable Gas Tanks*	Covers information needs to ensure coring could be performed safely (without igniting the crust) in tanks 241-SY-103 and 241-AW-101. **INACTIVE**	Rev. 1 issued 4/27/94 CCRN 9453471

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive

Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Dangerous Waste Regulatory WHC-SD-WM-DQO-025	*Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis*	Covers information needs for TWRS dangerous waste regulatory compliance and permitting.	Rev. 1 issued 7/2/99 Rev. 0 issued 7/2/96
Ferrocyanide WHC-SD-WM-DQO-007 Originally WHC-EP-0728	*Data Requirements for the Ferrocyanide Safety Issue Developed through the Data Quality Objectives Process*	Covers information needs for the resolution of the Ferrocyanide safety issue. **INACTIVE**	Rev. 2 issued 7/13/95 Rev. 1 issued 4/28/95 Rev. O issued 8/24/94 CCRN 9455679 Originally issued 12/31/93 CCRN 9361056
Flammable Gas WHC-SD-WM-DQO-004	*Flammable Gas Tank Safety Program: Data Requirements for Core Sample Analysis Developed through the Data Quality Objectives (DQO) Process*	Covers information needs to support resolution of the flammable gas issue.	Rev. 3A issued 4/2/98 Rev. 3 issued 12/18/97 Rev. 2 issued 7/20/95 Rev. 1 issued 5/1/95 Rev. 0 issued 5/13/94 CCRN 9453471
Hanford Tank Initiative (Characterization of the C-106 hard heel)	Title not yet determined.	Covers information needs to support HTI in hard heel removal and tank closure. Tank 241-C-106 only. **INACTIVE**	The HTI project is no longer active. Not currently scheduled for issuance.
Hazardous Vapor Safety Screening WHC-SD-WM-DQO-20	*Data Quality Objectives for Hazardous Vapor Safety Screening*	Covers information needs to support the Vapor Programs safety screening. **INACTIVE**	Integrated into In-tank Generic DQO. Rev. 2 issued 11/15/99

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Historical Data Acquisition Model Verification WHC-SD-WM-DQO-018	*Historical Model Evaluation Data Requirements*	Covers information needs supporting the historical model for tank grouping. **INACTIVE**	Rev. 2 issued 2/18/97 Rev. 1 issued 6/20/96 Rev. 0 issued 5/8/95
HLW Feed DQO (Waste Immobilization) WIT-98-024	*High-Level Waste Feed Data Quality Objectives*	Covers information needs required by the WTP contractor and DOE WP&D for Phase 1 HLW waste feed. **INACTIVE**	Replaced by PNNL-12163 Rev. 0 issued 5/98
HTI AX-104 Vadose Zone HNF-2326	*Hanford Tank Initiative Tank 241-AX-104 Upper Vadose Zone Demonstration Data Quality Objectives*	Covers demonstration of the cone penetrometer technology and upper vadose zone sample collection within the AX tank farm. Data used to support risk assessment and tank closure. **INACTIVE**	The HTI project is no longer active. Rev. 0 issued 3/24/98
HTI Tank AX-104 waste Characterization HNF-SD-WM-DQO-027	*Tank 241-AX-104 Waste Characterization Data Quality Objective*	Covers information needs to support Hanford Tank Initiative (HTI) in tank closure and risk assessment. Tank 241-AX-104 only. **INACTIVE**	The HTI project is no longer active. ECN (Rev. 0-B) issued 1/13/98 ECN (Rev. 0-A) issued 10/10/97 Rev. 0 issued 9/3/97
In-Tank Generic Vapor WHC-SD-WM-DQO-002	*Data Quality Objective for Tank Hazardous Vapor Safety Screening* (Formerly - *Data Quality Objectives for Generic In-Tank Health and Safety Vapor Issue Resolution*	Covers information needs required by the Vapor Program. Presently retained to cover industrial health and safety.	Rev. 2 issued 11/15/95 Rev. 1 issued 4/28/95 Rev. 0 issued 3/7/94 CCRN 9451694

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
LAW and HLW Feed Processing DQO PNNL-12163	Low-Activity Waste and High-Level Waste Feed Processing DQOs.	Waste feed processing information needs required by DOE WP&D. Supercedes PNNL-12064 and WIT-98-024.	Rev. 0 issued 4/99
LAW Feed DQO (Waste Immobilization) Revision number PNNL-12064 Original number is WHC-SD-WM-DQO-023	Revision title is: *Low-Activity Waste Feed Data Quality Objective* Old title is: *Data Requirements For TWRS Privatization Waste Characterization*	Covers Phase 1 LAW waste feed information needs required by the WTP contractor and DOE WP&D. **INACTIVE**	Replaced by PNNL-12163. Rev. 0 issued 12/98 (PNNL-12064) Rev. 0 issued 11/97 (WIT-98-010) Rev. 0 issued 11/13/96 (WHC-SD-WM-DQO-023)
Organic Complexant WHC-SD-WM-DQO-006	*Data Quality Objective to Support Resolution of the Organic Fuel Rich Tank Safety Issue*	Covers information needs to resolve the organic complexant issue. **INACTIVE**	Rev. 2 issued 9/8/95 Rev. 1 issued 4/28/95 Rev. 0 issued 4/29/94 CCRN 9453093
Organic Solvent HNF-SD-WM-DQO-026	*Data Quality Objective to Support Resolution of the Solvent Safety Issue*	Covers information needs to resolve the safety issue of organic solvent pools in the tanks. Issue closed August 2000. **INACTIVE**	Rev. 0 issued 8/13/97
PCBs RPP-7614	*Interim Basis for PCB Sampling and Analysis*	Covers information needed to manage PCBs in DST system waste, waste entering the DST system and waste feed to WTP.	Rev. 0 issued 1/18/01 To be used until formal DQO is approved.
Pre-retrieval Tank Closure	*Data Quality Objective for Pre-retrieval Requirements to Support Tank Closure*	Covers information to support tank closure pre-retrieval requirements.	Estimated completion by April 15, 2001.

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Pretreatment WHC-SD-WM-DQO-022 Originally DQO-011 Sampling Strategy WHC-SD-WM-TA-154	*Data Needs and Attendant Data Quality Objectives for Tank Waste Pretreatment and Disposal*	Covers information needs to support enhanced sludge washing, solids/liquid separation, cesium removal, strontium removal, TRU removal, and technetium removal. Current information presently collected by the WTP contractor. **INACTIVE**	Rev. 0 issued 6/29/95 OLD DQO WAS DQO-011 Rev. 1 issued 9/15/94 CCRN 9456763 Rev. 0 issued 8/3/94 CCRN 9455386
Retrieval (equipment) WHC-SD-WM-DQO-008	*Characterization Data Needs for Development, Design and Selection of Retrieval Equipment and Process for SSTs and DSTs, Developed through the DQO Process*	Covers information needs for retrieval equipment requirements. Expected to be applied to three tanks only (C-102, C-104, and AZ-101).	Rev. 1 issued 7/31/96 Rev. 0 issued 6/29/95
Retrieval Performance Evaluation (RPE) RPP-7994	*Retrieval Performance Evaluation Data Quality Objectives*	The RPE methodology is a risk-based approach to retrieval system design that considers meeting applicable regulatory requirements as a function of past tank leaks, potential leakage losses during retrieval operations, and tank waste residuals remaining after completion of waste retrieval operations.	Rev. 0 issued in 4/01
Safety Screening WHC-SD-WM-SP-004	*Tank Safety Screening Data Quality Objectives*	Covers information needs to determine safe storage of tank waste. (Includes criticality analysis requirements.)	Rev. 2 issued 8/31/95 Rev. 1 issued 4/27/95 Rev. 0 issued 2/23/94 CCRN 9451671

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
S-112 Dissolution Demonstration DQO	*Data Quality Objectives for the Salt Cake Dissolution Retrieval Demonstration*	Covers information needed to assess the salt cake dissolution and retrieval demonstration in tank 241-S-112.	Rev. 0 issued 3/19/01.
Tank 241-Z-361 Characterization DQO for Sludge HNF-4225	*241-Z-361 Sludge Characterization DQO*	Covers information needs for disposal of the waste in tank 241-Z-361. **INACTIVE**	Rev. 0 issued 4/99
Tank 241-Z-361 Characterization DQO for Vapor HNF-2176	*Tank 241-Z-361 Waste Characterization Data Quality Objective: Headspace Vapor and Tank Structure*	Covers information needs to open, vapor sample, and photograph tank 241-Z-361. **INACTIVE**	Rev. 0 issued 6/10/98
Tank 241-U-107 Dissolution Test DQO RPP-7947	*Data Quality Objectives for Tank 241-U-107 Dissolution Test*	Covers information needed for the dissolution test planned for tank 241-U-107	Rev. 0 issued 5/15/01
Vapor Rotary Mode WHC-SD-WM-SP-003	*Rotary Core Vapor Sampling Data Quality Objective*	Covers information needs to support the NOC for rotary coring. **INACTIVE**	Rev. 0 issued 2/25/94 CCRN 9451694
Waste Compatibility WHC-SD-WM-DQO-001	*Data Quality Objective for Tank Farms Waste Compatibility Program*	Covers information needed for waste transfers within the tank farms and for waste coming into the tank farms.	Rev. 3 issued 7/2/99. Rev. 2 issued 6/23/97 Rev. 1 issued 4/24/95 Rev. 0 issued 3/4/94 CCRN 9451694

Table C-1. RPP Data Quality Objective Documents (9 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Waste Feed Delivery - Confirm Tank T is Appropriate for Batch X (LAW) HNF-1796	*Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T Is an Appropriate Feed Source for Low-Activity Waste Feed Batch X*	Covers information needs for waste feed delivery for LAW to the staging tanks for Phase 1.	Currently being revised. Rev. 2 issued 3/3/99 Rev. 1 issued 7/2/98 Rev. 0 issued 3/11/98
Waste Feed Delivery - Confirm Tank T is Appropriate for Batch X (HLW) HNF-1558	*Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T Is an Appropriate Feed Source for High Level Waste Feed Batch X*	Covers information needs for waste feed delivery for HLW to the staging tanks for Phase 1.	Currently being revised. Rev. 2 issued 8/26/99 Rev. 1 issued 3/3/99 Rev. 0 issued 8/20/98
Waste Feed Delivery - Waste Certification (HLW)	*High-Level Waste Feed Certification Data Quality Objective*	Covers information needs to transfer HLW from the staging tank to the WTP contractor.	Postponed until certification requirements are established.
Waste Feed Delivery - Waste Certification (LAW) RPP-6070	*Low-Activity Waste Feed Certification Data Quality Objective*	Covers information needs to transfer LAW from the staging tank to the WTP contractor.	Postponed until certification requirements are established.
Waste Feed Delivery - Waste Transfer Control HNF-1802	*Data Quality Objectives for TWRS Privatization Phase 1: Tank Waste Transfer Control*	Covers information needs to transfer waste into or out of a Phase 1 feed tank prior to retrieval.	Currently being revised. Rev. 1 issued 4/28/99 Rev. 0 issued 8/4/98
Waste Immobilization Regulatory PNNL-12040	*Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project.*	Covers information needs under RCRA and corresponding state requirements, and to facilitate permitting and compliance activities for treatment and disposal of waste.	Rev. 0 issued 12/98

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SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Wastewater Regulatory WHC-SD-WM-DQO-024	*Data Quality Objectives for Regulatory Requirements for Wastewater Effluents Sampling and Analysis*	Covers regulatory information needs for TWRS wastewater effluents. Does not apply to tank waste.	Rev. 0 issued 3/28/96

Notes: CCRN = correspondence control reference number
ECN = engineering change notice
NOC = Notice of Construction
RCRA = Resource Conservation and Recovery Act
TWRS = Tank Waste Remediation System
WP&D = Waste Processing and Disposal